Assessment of Dam Safety of Coal Combustion Surface Impoundments

Indianapolis Power & Light Company

Petersburg Generating Station
6925 N State Road 57
Petersburg, Indiana

Prepared for:
U. S. Environmental Protection Agency
Washington, D. C.

November 15, 2010

CDM Project No.: 76658.1801.034.SIT.PETER

Preface

The assessment of the general condition of the impoundments is based upon available data and visual observations. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be realized that the reported condition of the impoundments is based on observations of field conditions at the time of assessment, along with data made available to the assessment team. In cases where an impoundment may have been lowered or drained prior to the assessment, such action, while improving the stability and safety of the impoundment, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is critical to note that the condition of impoundments depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the impoundment at the time of the assessment is representative of the condition of the impoundment at some point in the future. Only through continued care and assessment can there be any chance that unsafe conditions will be detected.

Prepared By:

CDM

I certify that the management unit (s) referenced herein have been assessed on May 3 and 4, 2010:

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Section 1
Introduction & Project Description

1.1 Introduction

CDM was contracted by the United States Environmental Protection Agency (USEPA) to perform site assessments of selected coal combustion waste (CCW) surface impoundments. As part of this contract, CDM performed a site assessment of four CCW impoundments at the Petersburg Generating Station, owned and operated by Indianapolis Power & Light Company (IPL).

The Petersburg Generating Station is located in Petersburg, Pike County, Indiana as shown on **Figure 1**, Locus Map. The state boundary with Illinois and Kentucky is approximately 22 miles west and 46 miles south of the site, respectively. The Town of Petersburg, Indiana is approximately 2.6 miles downstream (southwest) of the site, as shown on **Figure 2**. The Route 61 bridge across the White River is approximately 2.6 miles downstream, as shown on **Figure 2**.

CDM made a site visit to the Petersburg Generating Station on May 3 and 4, 2010 to collect relevant information, inventory the impoundments, and perform visual assessments of the impoundments. CDM representatives Michael L. Schumaker, P.E. and Michael P. Smith were accompanied by the following individuals:

Company	Name and Title
IPL	Nysa L. Hogue, Senior Environmental Coordinator
IPL	Jeff Harter, Plant Leader
IPL	Erv A. Leidolf, Senior Scientist

1.2 State Regulation

The Indiana Department of Natural Resources (IDNR) Water Division is responsible for the State's dam safety program. It is our understanding that to date IDNR has not been actively involved in the regulation of CCW impoundments. IPL staff stated there are no State inspection reports for the impoundments at the Petersburg Generating Station.

1.2.1 Issued Permits

The IPL Petersburg Generating Station was issued a permit authorizing discharge under the National Pollutant Discharge Elimination System (NPDES) to the White River in accordance with effluent limitations, monitoring requirements, and other conditions set forth in the permit. The station's current permit will expire December 31, 2010. The permit number is IN0002887.

1.3 Datum

Elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29). Directional coordinates are referenced to magnetic north.

1.4 Site Description and Location

1.4.1 Impoundment Construction and Historical Information

The Petersburg Generating Station began operation in June 1967. The CCW is generated by Unit ST1 (online since 1967), Unit ST2 (online since 1969), Unit ST3 (online since 1977), and ST4 (online since 1986). Based on the last three years of operation, the plant burns 15,000 tons of coal on average producing approximately 1,500 tons of CCW.

The original CCW impoundment was constructed between 1964 and 1967. The impoundment was constructed in the vicinity of the footprint of current Pond A and Pond A – Discharge. A typical cross-section of the embankment is presented on **Figure 3**. The embankment was constructed with native soil to a crest elevation of approximately El. 430 which was approximately 15 feet in height above the then-existing site grades. The top one foot of soil was to be removed and the subgrade compacted prior to embankment construction based on the information reviewed. The embankment design plans depict a 16-foot-wide crest with a 12-foot-wide access road and 2.25 Horizontal: 1Vertical (2.25H:1V) side slopes. The information reviewed showed an outlet structure located in the northeast corner of the impoundment that would discharge water into the White River.

In 1978, the Pond A embankment crest was raised to elevation El. 435. A typical cross-section of the embankment is presented in **Figure 3.** The information reviewed indicated that the existing embankment was cleared and grubbed prior to construction and the subgrade was specified to be compacted to a minimum of 95% of the maximum density as determined by AASHTO T-99. The embankment raise was constructed with bottom ash and flyash with an 8-foot-wide clay core in the middle of the embankment and was specified to be compacted to a minimum of 95% of the maximum density as determined by AASHTO T-99. The constructed depth of the clay core could not be determined based on the data reviewed. The clay core did not appear to have been constructed for the southern embankment. The side slopes of the embankment raise were constructed at 3H:1V on both the interior and exterior slopes. In addition, an internal divider embankment was constructed within the impoundment creating Pond A and Pond A – Discharge and the current configuration of the ponds. Two (2) 36-inch-diameter corrugated metal pipes (CMP) were installed through the divider embankment. In addition, the outlet structure in Pond A – Discharge was raised, as shown in **Figure 3**. At some point in time the recycling pump station was also constructed in the vicinity of the impoundment. No design documents for the pump station were available for CDM to review.

It is CDM's understanding based on discussions with plant personnel and review of data provided that in 1982 the original embankment crest was raised to El. 440. A typical cross-section of the embankment is presented in **Figure 3.** The information reviewed indicated that the existing embankment was cleared and grubbed prior to

construction. The embankment was specified to be constructed with bottom ash and flyash compacted to a minimum of 95% of the maximum density as determined by AASHTO T-99. The interior and exterior embankment slopes were shown to be constructed at 3H:1V. No clay core was shown on the plans for the last vertical expansion. As part of various plant upgrades, fill material was placed against the south and west exterior slope and portions of Lick Creek have been backfilled.

In 1986, a second CCW impoundment in the current location of Pond B and Pond C was commissioned to the north of the existing impoundment s, Pond A and Pond A – Discharge. The impoundment was constructed at the edge of the floodplain to the east of the White River. The specifications and geotechnical report indicate the site was cleared and grubbed and the foundation subgrade was prepared prior to construction. Unsuitable and granular material was specified to be removed and replaced with compacted clay. The subgrade was then specified to be compacted to at least 95% of the maximum dry density as determined by the Standard Proctor Test (ASTM D-698). The clay soil in the floodplain to the west of the impoundment and inside the impoundment was specified to be borrowed to construct the embankment. The embankment was designed to be constructed with 2.5H:1V interior and exterior side slopes. The bottom of the interior portion of the impoundment was designed to be sloped at approximately 8H:1V and be excavated approximately 4 to 5 feet below existing grades creating a partially incised storage area. A typical cross-section of the embankment is presented in **Figure 4**. The embankment was constructed to a crest elevation of El. 440 with a 20-foot-wide crest. The slopes were specified to be covered with 6 to 8 inches of topsoil and seeded.

In 1999, two embankments were constructed over the second CCW impoundment creating Pond B and Pond C. The crest of the embankments were raised to elevation El. 455. A typical cross-section of the embankment is presented in **Figure 4**. The information reviewed indicated that the impoundment was drained prior to construction to remove excess water in the ash. The existing embankment and surface of the impoundment was specified to be cleared and grubbed prior to construction and the subgrade was to be compacted to a minimum of 95% of the maximum density as determined by the Modified Proctor Test (ASTM D-1557). The exterior toe of the embankments were keyed down into the interior slope of the existing embankment by excavating a 17-foot-wide notch around the perimeter approximately 10 feet below the original crest (El. 430) as shown on **Figure 4**. The embankments for Pond B and Pond C were specified to be constructed with stabilized flue gas desulfurization (FGD) scrubber materials , also referred to as Poz-O-Tec. The stabilized FGD was specified to be compacted to a minimum of 95% of the maximum dry density as determined by the Modified Proctor Test. The exterior side slopes constructed above of the original crest were designed to be constructed at a 3H:1V slope, and the interior slopes were to be constructed at a 3H:1V slope. Outlet structures were constructed the southeast corner of each impoundment. No detail on the outlet structures was

available for review. The outlet structures consist of cast-in-place concrete box structures with stoplogs and a 30-inch-diameter CMP outlet pipe.

1.4.2 Current CCW Impoundment Configuration

The impoundments at the Petersburg Generating Station are currently used as settling ponds for CCW waste and other plant wastes. CCW waste sluiced into the ash ponds include:

- Bottom ash;
- Flyash;
- Boiler slag;
- FGD control residuals

Other plant wastes sluiced into the ash ponds include liquids from:

- Recirculating cooling tower blowdown;
- Low-volume waste;
- Yard drains;
- Oil-water separator wastewater;
- Air pre-heater wash;
- Boiler, condenser, air pre-heater, and cooling cleaning wastes;
- FGD system blowdown;
- Miscellaneous FGD wastewaters;
- Once-through noncontact cooling water;
- Screen-backwash water;
- Floor drains;
- Storm water run-off;
- Water treatment wastes;
- Tire-truck water;
- Sanitary wastewater;
- Metal-cleaning wastes; and
- River-dredging materials.

There are currently four impoundments at the Petersburg Generating Station as shown on **Figure 5**.

The southern impoundments consist of Pond A and Pond A – Discharge. Pond A and Pond A – Discharge are approximately 67.3 and 5.4 acres in size, respectively. The embankment crest elevation of both impoundments is approximately El. 437. The water levels in Pond A and Pond A – Discharge are generally operated at fixed elevations of approximately El. 436.5 and El. 434.4, respectively.

Pond A is used as the primary settling basin for sluiced liquid waste materials. All CCW and other liquids are currently sluiced into Pond A. At the south embankment

two (2) 36-inch-diameter and five (5) 10-inch-diameter ductile iron (DI) pipes sluice CCW into the impoundment (Photos 7 and 8). A rim ditch (Photos 5, 6, and 7) excavated adjacent to the south and east interior slope diverts flow, increasing the settling time of materials in the impoundment. Along the west embankment one (1) 12-inch-diameter DI and two (2) 8-inch-diameter stainless steel (SS) pipes sluice other liquids into the impoundment (Photo 20). At a headwall located at the western abutment of the divider embankment between Pond A and Pond A – Discharge, two (2) 24-inch-diameter reinforced concrete pipes (RCPs) and one (1) 4-inch-diameter DI pipes sluice other wastes into Pond A (Photo 36). Pond A is connected to Pond A – Discharge through two (2) 36-inch-diameter CMPs (Photo 45). Pond A –Discharge is used as a secondary settling basin prior to water being discharged at the outlet structure or being diverted into the recycling pump station. The outlet structure consists of a box structure with stoplogs and a 24-inch-diameter RCP with an invert elevation of El. 415.9.

The northern impoundments consist of Pond B and Pond C. Pond B and Pond C are approximately 35 and 30 acres in size, respectively. The embankment crest elevation of both impoundments is approximately El. 455. The two impoundments are currently inactive. Standing water in Pond C was limited to the immediate vicinity of the outlet structure and was at approximately El. 448.4. At the time of the CDM's site visit, the ash in Pond C was being dredged for a beneficial-use project, and there was very limited standing water in Pond C.

Pond B and Pond C are currently used as storage areas for CCW material. CCW and other material dredged from Pond A and Pond A – Discharge are stored in Pond B or Pond C to allow dewatering. Material is stored in the impoundments until it is dredged and shipped back to nearby coal mines or used for beneficial reuse applications. Stormwater surface runoff in these impoundments is discharged back into Pond A through the outlet structures. The outlet for Pond B discharges at Pond A's north embankment interior slope. The outlet for Pond C discharges into a drainage ditch that runs parallel to the toe of the east embankment and discharges into Pond A.

1.4.3 Other Impoundments

No other impoundments were identified at the Petersburg Generating Station.

1.5 Previously Identified Safety Issues

Based on our review of the information provided to CDM and as reported by EPA, there have been no identified safety issues at the Petersburg Generating Station within the last 10 years. A potential safety issue was observed during the site visit. The safety issue is discussed in **Section 2**.

1.6 Site Geology

The Petersburg Generating Station CCW impoundments are located in the Wabash Lowlands, an area of subdued landforms consisting of broad valleys and smoothly rounded hills with gentle bedrock slopes. The landforms' gentle nature is reflective of the relatively non-resistant Pennsylvanian-age siltstone and shale underlying the site. Pennsylvania-age bedrock underlying the site is from the Sullivan Lowland Unit.

The original impoundments were apparently constructed over White River alluvium deposits that are underlain by bedrock. The impoundments are bounded on the east by uplands that consist of eolian loess material and residual clays. The bedrock in the area consists of shale, siltstone, limestone, sandstone, and coal of the Carbondale Group of the Sullivan Lowland Unit. The top of bedrock at the site ranges from approximately El. 393 to El. 403 based in the information reviewed.

Section 2
Field Assessment
2.1 Visual Observations

CDM performed a visual assessment of the CCW impoundments at the Petersburg Generating Station. The perimeter embankments of the impoundments total approximately 18,000 feet in length and are up to 32 feet high. The assessments were completed following the general procedures and considerations contained in Federal Emergency Management Agency's (FEMA's) Federal Guidelines for Dam Safety (April 2004) relative to observations concerning settlement, movement, erosion, seepage, leakage, cracking, and deterioration. A Coal Combustion Dam Inspection Checklist and CCW Impoundment Inspection Form, developed by USEPA, were completed on-site for each impoundment during the site visit. Copies of these forms are included in **Appendix A**. Photograph location plans are shown on **Figures 6a and 6b**, and photographs are included in **Appendix B.**

It should be noted tall vegetation obscured visual observations in areas of the interior and exterior embankments.

CDM visited the site on May 3, 2010 and May 4, 2010 to make visual observations of the impoundments. The weather was sunny with temperatures between approximately 75 and 80 degrees Fahrenheit. Prior to the site visit the following precipitation occurred as shown in **Table 1**.

Table 1 – Approximate Precipitation Prior to Site Visit

Dates of Site Visits – May 3, 2010 & May 4, 2010		
Day	**Date**	**Precipitation (inches)**
Monday	April 26	0.46
Tuesday	April 27	0.02
Wednesday	April 28	0
Thursday	April 29	0
Friday	April 30	1.5
Saturday	May 1	1.3
Sunday	May 2	0.39
Monday	May 3	0.11
Tuesday	May 4	0
Total	**Week Prior to Site Visit**	**3.78**
Total	**Month Prior to Site Visit**	**6.85**

Notes:

1. Precipitation data from www.weather.com.

2.2 Pond A

2.2.1 Exterior Slope

The exterior slopes appear to be in fair condition. The exterior slopes on the south and west embankments were approximately 3H:1V (Photos 13, 19, 22, 23, 24, 26, 27, 28, and 34). The north exterior slope on the divider embankment between Pond A and Pond A – Discharge was approximately 2H:1V (Photos 37 and 47).

The south and west embankments were generally covered with grass approximately 6 to 12 inches tall. The south embankment near the sluice pipes was covered with ash (Photo 12). The north slope of the divider embankment was generally protected with riprap armor placed over filter fabric. Thick wetland-type vegetation growing in the riprap was present on the north slope (Photos 37, 43, and 44). The impoundment is incised on the north adjacent to Pond B and on the east adjacent to the railroad.

On the west and south embankments, there were multiple areas where a tractor had created large ruts and bare spots from mowing operations and an excavator had left large track marks from the ongoing construction on the interior slope (Photos 19, 22, 23, 26, 27, and 28).

A possible seepage area was observed on the west embankment exterior slope (Photo 25).

2.2.2 Crest

The crest of Pond A generally appeared to be in fair condition (Photos 1, 3, 4, 9, 10, 11, 12, 14, 49, 62, and 64). The crest was approximately 20 feet wide. The crest is surfaced with a compacted gravel access road on the north and east embankments. The crest on the south and west embankments were generally covered with grass approximately 6 to 12 inches tall. The crest around the sluice pipes on the south embankment was covered with ash (Photos 12 and 14). An access ramp excavated into the crest near the sluice pipes on the south embankment was observed (Photo 10 and 12). Track marks from an excavator were observed on the crest of the west embankment (Photos 26, 27, and 29).

2.2.3 Interior Slope

The visible portions of the interior slope generally appeared to be in fair condition (Photos 2, 6, 7, 9, 16, 17, 20, 21, 29, 30, 31, 32, 39, and 48). Tall, thick wetland-type vegetation up to 8 to 10 feet tall obscured the observation of north and east embankment as well as the divider embankment. The north and west interior slope of the divider embankment generally appeared to be armored with a layer of riprap armor.

The south and west embankment interior slopes were under construction during the site visit. Based on information provided by IPL staff, the construction consists of

regrading the interior slopes to 3H:1V with ash, placing a filter fabric on the slope, and covering the slope with a riprap armor layer. During the site visit, no clearing and grubbing was performed by the excavator operator. Tall wetland-type vegetation was flattened down (Photos 29 and 30) and ash was dumped with the excavator over the existing embankment. The excavator operator then graded the ash to approximately a 3H:1V slope with the bucket and tamped the ash with the bucket. Mirafi filter fabric was then placed on the ash (Photos 31 and 32). The top portion of the filter fabric was keyed into the crest. However, the bottom of the filter fabric stopped at the water level and was not keyed in. Large surface cracks approximately one inch in width were observed along the length of the recently placed ash material (Photo 18).

During the site visit, active piping/erosion of the crest was observed (Photo 15). The water had eroded the recently placed ash and formed an erosion cavity in the original embankment. The water was clear and had a constant estimated flow of 10 to 20 gpm. At the time of the site visit, IPL staff did not know the source of the water (i.e., if it was an unmarked pipeline in the embankment). The staff was in the process of identifying the source and addressing the situation. It is our understanding that after CDM's site visit IPL determined that the source of water was Unit #2 cooling tower blow down. It was reported by IPL that the erosion was addressed by placing riprap on the western and southern portions of Pond A's interior slope face, and that these corrective actions were completed on May 14, 2010.

During the site visit, four sets of sluice pipes were observed. The CCW sluice pipes on the south embankment appeared to be in fair condition (Photo 8). The two sets of active sluice pipes on the west embankment (Photo 20) and at the west embankment headwall also appeared to be in fair condition (Photo 36). A fourth set of inactive or abandoned pipes appeared to be in poor condition (Photo 30, 33, and 35). The IPL staff did not know the origin or purpose of these pipes. The excavator operator placed ash over the 24-inch-diameter RCP at the fourth set of pipes.

2.2.4 Outlet Pipes

The outlet pipes in Pond A were in fair condition (Photos 45 and 47). The inlets were clear of debris. A floating boom was wrapped around the inlets to reduce the potential for debris clogging the pipes.

2.3 Pond A – Discharge

2.3.1 Exterior Slope

The exterior slopes appear to be in fair condition. The exterior slope on the west embankment was approximately 3H:1V (Photos 70 and 71). The embankment was generally covered with riprap armor to approximately 5 feet below the crest. Some bare spots were observed above the riprap armor. Some metal stakes with 2"x4" lumber were observed above the riprap. The depth of the stakes and lumber, as well as their purpose, is unknown. No erosion or other deficiencies were observed on west embankment during the site visit.

2.3.2 Crest

The crest of Pond A - Discharge embankments appeared to be generally in fair condition (Photos 62, 63, and 64). The crest was generally approximately 20 feet wide. The crest is surfaced with a compacted gravel access road around the perimeter.

2.3.3 Interior Slope

The visible portions of the interior slope generally appeared to be in fair condition (Photos 37, 41, 42, 43, 44, 47, and 65). The interior slopes on the north and west embankments were approximately 3H:1V slope and approximately 2H:1V along the divider embankment. Tall, thick wetland vegetation up to 8 to 10 feet tall obscured the observation of north and west embankment and the divider embankment. Riprap armor was observed on the north slope of the divider embankment and around the outlet structure.

Some surficial erosion under the riprap on the north slope of the divider embankment was observed (Photo 40).

2.3.4 Outlet Structure and Recycle Pump Station

The outlet structure and Recycle Pump Station appeared to be in fair condition (Photos 41, 65, and 72). The inlet was free of debris and water was flowing through the trashrack. The outfall in the discharge canal appeared to be in poor condition (Photo 69). The pipe showed signs of deterioration and had previously collapsed. Based on our review of the information provided by IPL, BT SQUARED recommended IPL perform an inspection of the pipe. IPL staff stated an inspection has not yet been conducted.

Subsequent to CDM's site visit, IPL identified that on July 28, 2009 the pipe was repaired and determined to be in acceptable condition by BT SQUARED. IPL indicated that the condition assessment of the pipe was documented in a report dated October 2009 that was completed by BT SQUARED. A camera survey was not conducted by IPL based on the BT SQUARED assessment.

2.4 Pond B

2.4.1 Exterior Slope

The exterior slopes appear to be in fair condition. The exterior slopes on the north, south, and east embankments were approximately 3H:1V (Photos 49, 50, 51, 55, 58, 59, 62, 63, 64, 66, 94, 95, 96, and 97). The west embankment included a 20-foot-wide intermediate bench. The west embankment upper slope was approximately 3H:1V (Photos 75, 77, 79, 82, 83, 89, and 90) and the lower slope ranged from approximately 2H:1V to 2.5H:1V (Photos 73, 74, 81, 87, and 88).

The north, south, and west embankment slopes were generally covered with vegetation approximately 12 to 48 inches tall. There are multiple species of vegetation growing on the slopes. Generally there are two distinct bands of vegetation on the south embankment and upper exterior slope of the west embankment. Specifically, the vegetation was shorter near the crest, and a taller, dense vegetation was on the lower portion of the slope. The tall, dense vegetation obscured the observation of embankments.

Areas of sparse vegetation, bare spots, and tractor ruts were observed on the exterior slopes near the crest (Photos 61, 96). The stabilized FGD in these areas was generally very soft and fine grained.

Areas of surficial erosion, tractor ruts, and over-steep slopes were observed at various locations along the west embankment lower exterior slope near the bench (Photos 85 and 87). Surficial erosion was also observed on the south embankment (Photo 60).

An 8-inch-diameter rodent hole was observed on the west embankment upper exterior slope (Photo 86).

An 11-inch-diameter tree stump was observed on the embankment lower exterior slope (Photo 80).

The floodplain at the toe of the west embankment was saturated and flooded from recent storm events (Photos 77, 78, and 84). Possible seepage was observed at the toe of the south embankment and the bench of the west embankment (Photos 63 and 79).

The bench on the west embankment was generally in fair condition (Photos 75, 78, 79, 82, and 89). The bench was approximately 20 feet wide. The bench was surfaced with a compacted gravel access road that extends from Pond A – Discharge to Pond C. Some low spots with pooled surface water from the recent storm events and tire ruts were observed on the bench.

2.4.2 Crest

The crest of Pond B appeared to be generally in fair condition (Photos 53, 54, 67, 76, 91, 93, and 98). The crest was generally approximately 20 feet wide. The crest is surfaced with a compacted gravel access road. Some tire rutting was observed from the truck traffic.

Four piezometers were installed on the crest of Pond B and Pond C by BT SQUARED between April 22 and April 23, 2010. The well covers for the piezometers were observed (Photo 135).

2.4.3 Interior Slope

The interior slopes of the Pond B were not visible along the north, south, and west embankment due the presence of ash (Photos 53, 54, 67, 76, 91, 92, 93, and 98). The visible portion of the interior slope generally appeared to be armored with a layer of crushed stone. The visible portions of the interior slope were approximately 3H:1V.

2.4.4 Outlet Structure and Equalizer Pipe

The outlet structure in Pond B was in fair condition (Photos 56 and 57). The inlet was free of debris and stoplogs were still in place. Surface water was flowing into the outlet structure. Discharge from the outlet to Pond A was underwater and could not be observed.

The equalizer pipe in Pond B was in poor condition (Photo 146). The "T" at the end of the pipe was filled to the top with ash.

2.5 Pond C

2.5.1 Exterior Slope

The exterior slopes appear to be in fair condition. The exterior slopes on the south and east embankments were approximately 3H:1V (Photos 127, 129, 130, 131, 138, 139, 140, 144, and 145). The north and west embankments included a 20-foot-wide intermediate bench. On the north and west embankment, the upper slope was approximately 3H:1V (Photos 101, 109, 110, 111, 112, and 119) and the lower slope ranged from approximately 2H:1V to 2.5H:1V (Photos 103, 105, 106, 113, 117, and 123).

The north, south, and west embankment slopes were generally covered with a vegetation cover. The vegetation was approximately 12 to 48 inches tall, except along the east embankment. The vegetation along the east embankment ranged from approximately 5 to 8 feet tall. There are multiple species of vegetation growing on the slope. Generally there are two distinct bands of vegetation on the east embankment and upper exterior slope of the north and west embankment. Specifically, there was a shorter vegetation near the crest, and a taller, dense vegetation was on the lower portion of the slope. The tall, dense vegetation obscured the observation of embankments.

Tractor ruts were observed on the exterior slopes near the crest (Photos 119 and 128) in the very soft, fine-grained, stabilized FGD.

Areas of surficial erosion, tractor ruts, and over-steepen slopes were observed at various locations along the north and west embankment lower exterior slopes near the bench (Photo 115).

The floodplain at the toe of the west and embankment was saturated and flooded from recent storm events (Photos 105, 106, 114, and 124).

The bench on the west embankment was generally in fair condition (Photos 102, 107, 108, 113, 118, and 123). The bench was approximately 20 feet wide. The bench was surfaced with a compacted gravel access road that extends from Pond B to the access road at the toe of the east embankment. Some low spots with pooled water from the recent storm events and tire ruts were observed on the bench. Seepage was observed at the toe of the upper exterior slope on the inside of the bench on the north and west embankment (Photos 116, 122, and 125). A white and/or black sheen as well as iron staining was observed in the seepage water.

A drainage ditch runs parallel to the toe of the east embankment (Photos 127, 129 and 130). The outlet structure from Pond C discharges into the drainage ditch which discharges into Pond A. The drainage ditch was overgrown with tall, dense wetland-type vegetation approximately 5 to 8 feet tall. The tall, dense vegetation obscured the observation of the east embankment. The slope at the toe of the east embankment along the drainage ditch was over-steep. The water level in the drainage ditch was approximately 1.5 feet below the roadway.

2.5.2 Crest

The crest of Pond C generally appeared to be in fair condition (Photos 99, 100, 111, 112, 120, 121, 128, 133 ,136, and 137). The crest was generally approximately 20 feet wide. The crest is surfaced with a compacted gravel access road. Some tire rutting was observed from truck traffic.

2.5.3 Interior Slope

The interior slopes of the Pond C were not visible along the north, south, east, and west embankment due the presence of ash (Photos 99, 100, 104, 120, 121, 126, 128, 133, 134, 136, 137, and 143). The visible portion of the interior slope generally appeared to be armored with a layer of crushed stone. The visible portions of the interior slope were approximately 3H:1V.

2.5.4 Outlet Structure and Equalizer Pipe

The outlet structure in Pond C was in fair condition (Photos 132 and 136). The inlet was free of debris and stoplogs were still in place. Surface water was flowing into the outlet structure. Discharge from the outlet to the drainage ditch at the toe of the east embankment was observed in the thick vegetation.

The equalizer pipe in Pond C was in poor condition (Photos 141 and 142). The "T" at the end of the pipe was filled half way with ash. CDM understands that the current operating procedures do not include Ponds B and C being tied together and that the subject pipe is not currently being utilized. CDM also understands that IPL will clear the pipe if it will be used to tie the ponds together in the future.

Section 3
Data Evaluation

3.1 Design Assumptions

CDM was not provided with any of the original IPL design assumptions for the CCW impoundments. CDM has reviewed information made available by IPL related to the design and analysis.

3.2 Hydrologic and Hydraulic Design

CDM was not provided with any hydrologic and hydraulic designs or analyses for the four impoundments.

A preliminary evaluation of the hydraulic capacity of the impoundments was performed to estimate if the ponds are adequately sized to store or pass the design storm event. Based on "General Guidelines for New Dams and Improvements to Existing Dams in Indiana", IDNR (February 2010), the Probable Maximum Precipitation (PMP) for a 6-hour storm event over a 10 square-mile area in the vicinity of the site is approximately 27.3 inches. IDNR requires significant hazard structures to pass 50% PMP. The drainage area contributing to the ponds at this site is limited to the storage area within the impoundments. Preliminary evaluations indicate that there is enough storage capacity and freeboard in all four impoundments at the current operating pools to safely store a 50% PMP event without being overtopped.

3.3 Structural Adequacy and Stability

The IDNR requires new and existing structures be evaluated under standard design guidelines. Procedures established by the United States Army Corps of Engineers (USACE), the United States Bureau of Reclamation, the Federal Energy Regulatory Commission, and the United States Natural Resources Conservation Service are generally accepted engineering practice. Minimum required factors of safety outlined by the USACE in EM 1110-2-1902, Table 3-1 and seismic factors of safety by FEMA Federal Guidelines for Dam Safety, Earthquake Analyses and Design of Dams (pgs. 31, 32 and 38, May 2005) are provided in **Table 2**.

Table 2 - Minimum Required Factors of Safety

Load Case	Minimum Required Factor of Safety
Steady-State Condition at Normal Pool or Maximum Storage Pool Elevation	1.5
Rapid Drawdown Condition from Normal Pool Elevation	1.2
Maximum Surcharge Pool (Flood) Condition	1.4
Seismic Condition at Normal Pool Elevation	1.0
Liquefaction	1.3

CDM was not provided with information regarding the structural adequacy or stability of any of the four impoundments. CDM was not able to evaluate the stability of the embankments because CDM was not provided with sufficient information relative to the properties of the foundation or embankment materials.

3.4 Foundation Conditions

3.4.1 Pond A and Pond A – Discharge

Based on six test borings performed by ATEC Associates in 1979, the original perimeter embankment of Pond A and Pond A – Discharge appears to have been constructed over very soft to soft/very loose alluvium. The alluvium consists of discontinuous bands of silty sand, sandy silt, clayey silt, and silty clay.

Based on the 1979 plans and specifications, the interior portion of the perimeter embankment appears to have been constructed on natural ground. The 1979 and 1982 construction specifications indicate the subgrade was cleared and grubbed, and all unsuitable material and stumps were to be removed and replaced with satisfactory material. The subgrade was specified to be scarified to 8 inches below ground surface and compacted to a minimum of 95% of the maximum density as determined by AASHTO T-99.

The foundation conditions of the divider embankment between Pond A and Pond A – Discharge is unknown. A 1978 cross-section shows the embankment was constructed on top of the existing impoundment. No other records are available for the divider embankment.

3.4.2 Pond B and Pond C

Based on 23 test borings performed by ATEC Associates in 1986, the original perimeter embankment of Pond B and Pond C appears to have been constructed over very soft to soft/very loose alluvium. The alluvium consists of discontinuous bands of silty sand, sandy silt, clayey silt, and silty clay. The specifications and geotechnical report provided to CDM indicate the site was to be cleared and grubbed and the foundation subgrade prepared prior to construction. Unsuitable and granular material was specified to be removed and replaced with compacted clay. The subgrade was then to be compacted to at least 95% of the maximum dry density as determined by the Standard Proctor Test (ASTM D-698).

Based on the 1998 specifications, the impoundment was to be drained to remove excess water in the ash prior to construction. The specifications indicate the subgrade was to be cleared and grubbed, and all unsuitable material and stumps were to be removed and replaced with satisfactory material. The subgrade was to be scarified to 8 inches below ground surface and compacted to a minimum of 95% of the maximum dry density as determined by the Modified Proctor Test (ASTM D-1557). CDM was

not provided with information to determine if the material below the subgrade was wet ash, slag, or other unsuitable materials.

3.5 Operations & Maintenance

IPL personnel indicated that there is no written formal operation or maintenance program. They also do not have an emergency action plan. Routine maintenance performed includes mowing grass on embankment slopes once per year, and other activities as needed to address other observed conditions such as erosion and revegetation. IPL personnel also indicated water levels are not monitored in the impoundments.

In addition, Petersburg Generating Station personnel perform visual inspections of the impoundments every two weeks. Plant personnel were trained by BT SQUARED to perform the visual inspections. A copy of the typical inspection checklist is provided in **Figure 7**. As issues are observed, work orders are placed at the plant for identified deficiencies to be repaired. Additional observations are completed after significant storm events. These additional observations are not documented. Since 2008, semi-annual detailed visual inspections have also performed at the Petersburg Generating Station by BT SQUARED.

Section 4
Conclusions/Recommendations

4.1 Hazard Classification

The Petersburg Generating Station impoundments currently do not have an IDNR-developed Hazard Potential Classification. Based on the USEPA classification system, as presented on page 2 of the USEPA check list (**Appendix A**) recommended hazard ratings have been assigned to the impoundments, summarized in **Table 3** below.

Table 3 – Recommended Impoundment Hazard Classification Ratings

Impoundment	Recommended Hazard Rating	Basis
Pond A	Significant Hazard	• A breach would have an environmental impact on the White River and downstream area.
Pond A - Discharge	Significant Hazard	• A breach would have an environmental impact on the White River and downstream area. • A failure or misoperation of Pond A - Discharge could cause Pond A to fail.
Pond B	Significant Hazard	• A breach would have an environmental impact on the White River and downstream area. • A failure or misoperation of Pond B could damage transmission towers.
Pond C	Significant Hazard	• A breach would have an environmental impact on the White River and downstream area. • A failure or misoperation of Pond C could damage transmission towers. • A failure or misoperation of Pond C could damage the adjacent railroad line.

4.2 Acknowledgement of CCW Impoundment Condition

CDM acknowledges that the management units (Pond A, Pond A – Discharge, Pond B, and Pond C) referenced herein were assessed by Michael L. Schumaker, P.E. and Michael P. Smith. Ponds A, A – Discharge, B, and C appeared to be in FAIR condition based on site observations. However, there is a lack of documentation relative to the design and construction of these facilities as identified in Section 3 of this report. It is not known if critical studies or investigations (stability, hydrologic, hydraulic, seismic) have been performed to confirm that potential safety deficiencies do not exist. Therefore, despite the FAIR condition assessment based on field observations, Ponds A, A – Discharge, B, and C are judged to be in **POOR** condition based on the lack of design documentation. Additional documentation and future studies performed to confirm the condition and performance of these impoundments, such as confirmation of availability of sufficient storage capacity and additional slope stability analyses, may be sufficient to substantiate an improved condition assessment.

As described in the following sections, further studies, maintenance, and monitoring may further improve the condition of these impoundments.

4.3 Maintaining and Controlling Vegetation Growth

Tall, dense vegetation in areas obscured visual observations of the perimeter embankment slopes, in particular, on the east and north interior slope of Pond A and Pond A - Discharge, and around the perimeter of Pond B and Pond C. Typical practice is to remove 4-inch diameter and larger woody growth.

CDM recommends that vegetation be cut on a regular basis to ensure that adequate visual observations can be made by IPL's personnel during routine inspections and independent consultant during their semi-annual inspection.

4.4 Erosion Protection and Repair

Surface erosion, loss of ground cover, over-steep slopes, and tractor ruts were observed on multiple embankment slopes of Pond B and Pond C as discussed in Section 2. Thinning and loss of grass cover due to concentrated flow was noted on the embankment slopes. CDM recommends filling all surface erosion and re-seeding these areas.

4.5 Impoundment Hydraulic and Stability Analysis

IPL did not provide CDM with a hydraulic analysis showing the ability of the impoundment to safely pass or store the 50% PMP event. However, a preliminary evaluation performed by CDM suggests there is enough storage capacity at the current operating pool levels to safely store precipitation from this rainfall event. CDM recommends IPL perform a complete study to confirm this conclusion, and update the study if operating levels of the pond change in the future.

CDM was not provided with information regarding stability analyses performed prior to or following construction of Pond A, Pond A – Discharge, Pond B, or Pond C or information regarding properties of the embankment and foundation materials. It is recommended that detailed stability analyses be performed for Pond A, Pond A – Discharge, Pond B, and Pond C embankments. The stability analyses for each pond should include a subsurface investigation to evaluate existing soil parameters in the embankments and foundation soils and the installation of piezometers to measure the phreatic surface. Stability analyses should consider all appropriate operating and loading conditions including rapid drawdown, if applicable, and seismic events.

A recent subsurface exploration program was carried out by BT SQUARED between April 22 and April 23, 2010 for Pond B and Pond C. The exploration consisted of four test borings with continuous sampling down to depths of 30 feet below the crest. Based on historic test boring logs, the recent test boring performed by BT SQUARED did not penetrate the bottom of the original embankment or the foundation soils. A

complete evaluation of the stability of the Pond B and Pond C embankments cannot be performed without evaluating the foundation conditions. CDM recommends performing additional test borings into the foundation soils with selected borings drilled down to bedrock to properly evaluate the stability of the embankments.

CDM recommends that all analyses be performed by a registered professional engineer experienced in earthen dam design.

4.6 Inspection Recommendations

Based on the information reviewed by CDM it does not appear that IPL has adequate inspection practices. Currently inspection documentation prepared by plant personnel consist of limited checklists completed every two weeks for all five ponds to document the presence of any failures, erosion, vegetative cover in a "yes" or "no" format and to document operation conditions such as work activities. The inspection checklists are inadequate to document specific potential items that need to be addressed and the area where they are located. CDM recommends that plant personnel develop more-detailed inspection documentation procedures to aid in ensuring that they are performing adequate inspections and adequately documenting observations over time. Documentation should include a sketch of relevant features observed, and the documentation should be periodically reviewed to identify if conditions are worsening and/or if significant changes are occurring which could lead to additional maintenance issues or safety concerns.

Inspection procedures should include the recording of data from existing piezometers on Pond B and Pond C. A staff gage should be installed at outlet structures to record water levels in the impoundments, if applicable. In addition, inspections should be made following heavy rainfall and/or high water events on the White River, and the occurrence of these events should be documented. It is recommended that inspection records be retained at the facility for a minimum of three years.

Section 5
Closing

The information presented in this report is based on visual field observations and review of reports and data provided to CDM by IPL for the Petersburg Generating Station surface impoundments. The conclusions and recommendations presented are based, in part, on limited information available at the time of this report. This report has been prepared in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made. Should additional information become available or changes in field conditions occur, the conclusions and recommendations provided in this report should be re-evaluated by a qualified professional engineer.

Section 6
Reports and References

The following is a list of reports and drawings that were provided by Indianapolis Power & Light Company and were utilized during the preparation of this report and the development of the recommendations presented herein.

1. Drawing No. 008-01-6-Y-D-40R, "Phase III Grading Sheet – 1", prepared by Stone & Webster Engineering Corporation, April 10, 1967

2. Specification No.008-00-0-Y-S-42A, Section III, Detailed Specification, prepared by Indianapolis Power & Light Company, 1978

3. Test boring logs, prepared by ATEC Associates, Inc., March, 1979

4. Drawing No. 008-00-6-Y-D-42A, "Grading Plan – Raise Ash Pond Dike to EL 435.0", prepared by Indianapolis Power & Light Company, October 5, 1979

5. Drawing No. 008-00-6-Y-D-42C, "Ash Pond Cross Section", prepared by Indianapolis Power & Light Company, April 1982

6. Specification No.008-00-0-Y-S-42B, Section III, Detailed Specification, prepared by Indianapolis Power & Light Company, 1982 revision

7. Drawing No. 008-00-6-Y-D-42A, "Grading Plan – Raise Ash Pond Dike to EL 440.0", prepared by Indianapolis Power & Light Company, April 30, 1982

8. Drawing No. 008-00-6-Y-D-42R, "Plan New Ash Pond", prepared by Indianapolis Power & Light Company, 1986

9. Drawing No. 008-00-6-Y-D-42C, "New Ash Pond Cross Section", prepared by Indianapolis Power & Light Company, November 1, 1986

10. Specification No.008-00-0-Y-S-42F, Section III, prepared by Indianapolis Power & Light Company, 1986

11. Field Density Test Results Pond B, IPL Ash Dike, prepared by ATEC Associates, Inc., 1986

12. Subsurface Exploration Report prepared by ATEC Associates, Inc., March 26, 1986.

13. Drawing No. 008-00-6-Y-M-40P, "Topographical Plan – South Portion of Petersburg Property with Surface and Underground Mines", prepared by Indianapolis Power & Light Company, October 20, 1993

14. Drawing No. 008-00-6-Y-M-40P, "Topographical Plan – North Portion of Petersburg Property with Surface and Underground Mines", prepared by Indianapolis Power & Light Company, October 19, 1993

15. Drawing No. 008-00-6-Y-D-40F, "Petersburg Plant Layout for Title 5 Air Permit", prepared by Indianapolis Power & Light Company, August 16, 1996

16. IPL Sketch No. C-2, "Pond B Modifications Levee Extension Sections and Details", prepared by Indianapolis Power & Light Company, March 11, 1998

17. IPL Sketch No. C-1A, "Pond B Extend Exterior Levee", prepared by Indianapolis Power & Light Company, March 11, 1998

18. Particle Size Distribution Report, prepared by ATC Associates Inc., July 13, 1998

19. Specification No.008-00-0-Y-S-42K, Section III, Technical Specifications issue No. 2, prepared by Indianapolis Power & Light Company, August 27, 1998

20. Proctor Tests, IP&L Generating Station, prepared by Alt & Witzig Engineering Inc., October 1998.

21. Field Density Test Results, October 1998 to July 1999.

22. Petersburg Ash Pond Information, RFI Response, March 19, 1999

23. Drillers' Field Log, prepared by C&K Drilling, December 29, 1999

24. C & K Boring Water Levels, prepared by , January, 2000

25. 2008 Dike Inspection – Petersburg Generating Station Ash Pond Facilities, prepared by Geosyntec Consultants, September 5, 2008

26. Response to U.S. EPA 104(e) Information Request, prepared by Indianapolis Power & Light Company, May 13, 2009

27. Geotechnical Investigation Proposal, Petersburg Generating Station Ash Pond Facilities, BT SQUARED Proposal #P4563, prepared by BT SQUARED, September 25, 2009

28. Summary of System Wide Inspection Requirements, Inspection Schedule, prepared by Indianapolis Power & Light Company

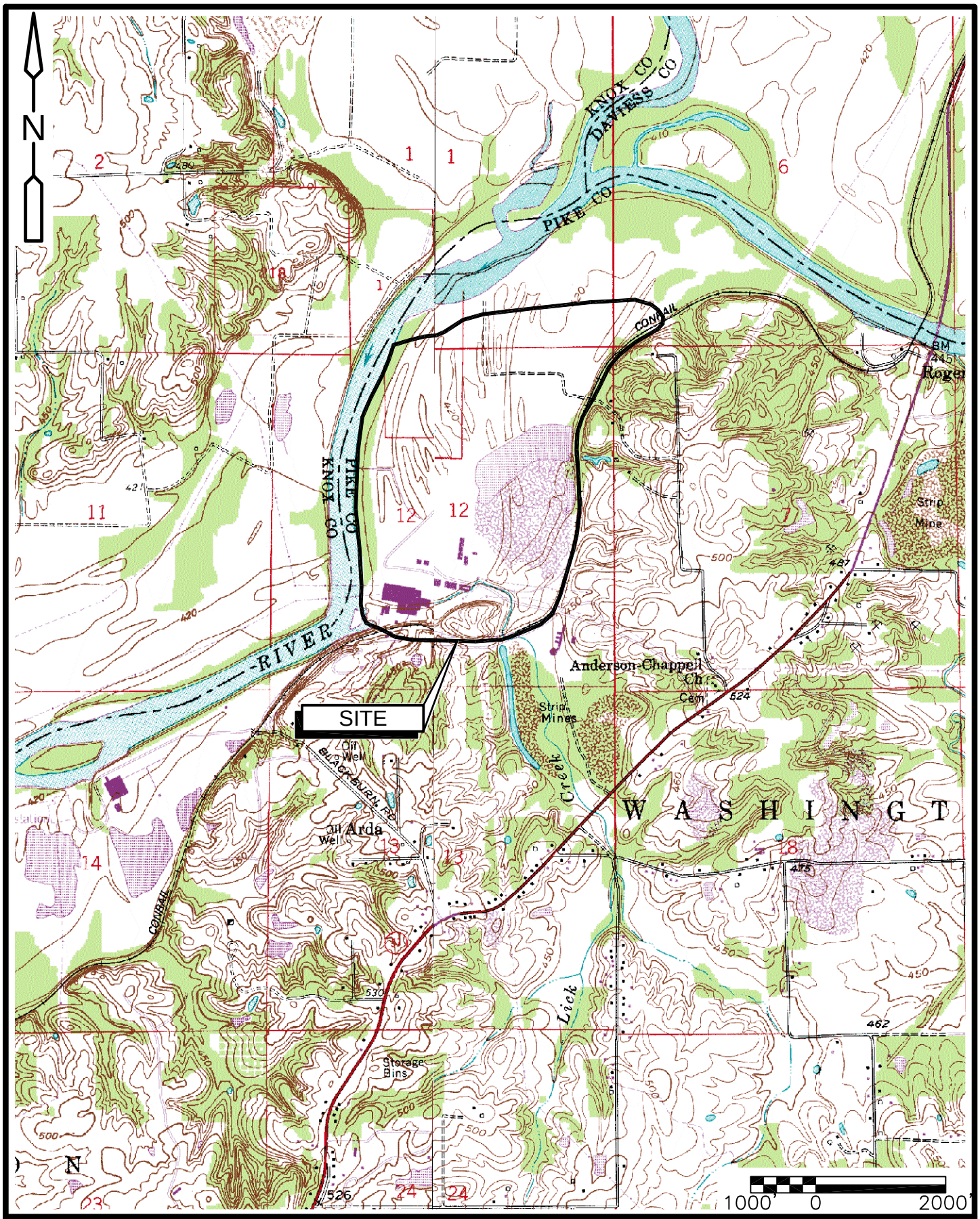
29. 2009 Dike Inspection – Petersburg Generating Station Ash Pond Facilities, prepared by BT SQUARED, August 27, 2009

30. 2009 Dike Inspection – Petersburg Generating Station Ash Pond Facilities, prepared by BT SQUARED, March 8, 2010

31. Bi-Weekly Ash Pond Inspections Record, prepared by BT SQUARED, from November 13, 2008, to April 5, 2010

32. General Guidelines for New Dams and Improvements to Existing Dams in Indiana, IDNR, February 2010

Figures



USGS TOPOGRAPHIC MAPS
QUADRANGLE MAPS MONROE CITY AND SANDY HOOK
CONTOURS AND ELEVATIONS IN FEET

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LOCUS PLAN
JUNE 2010
FIGURE 1

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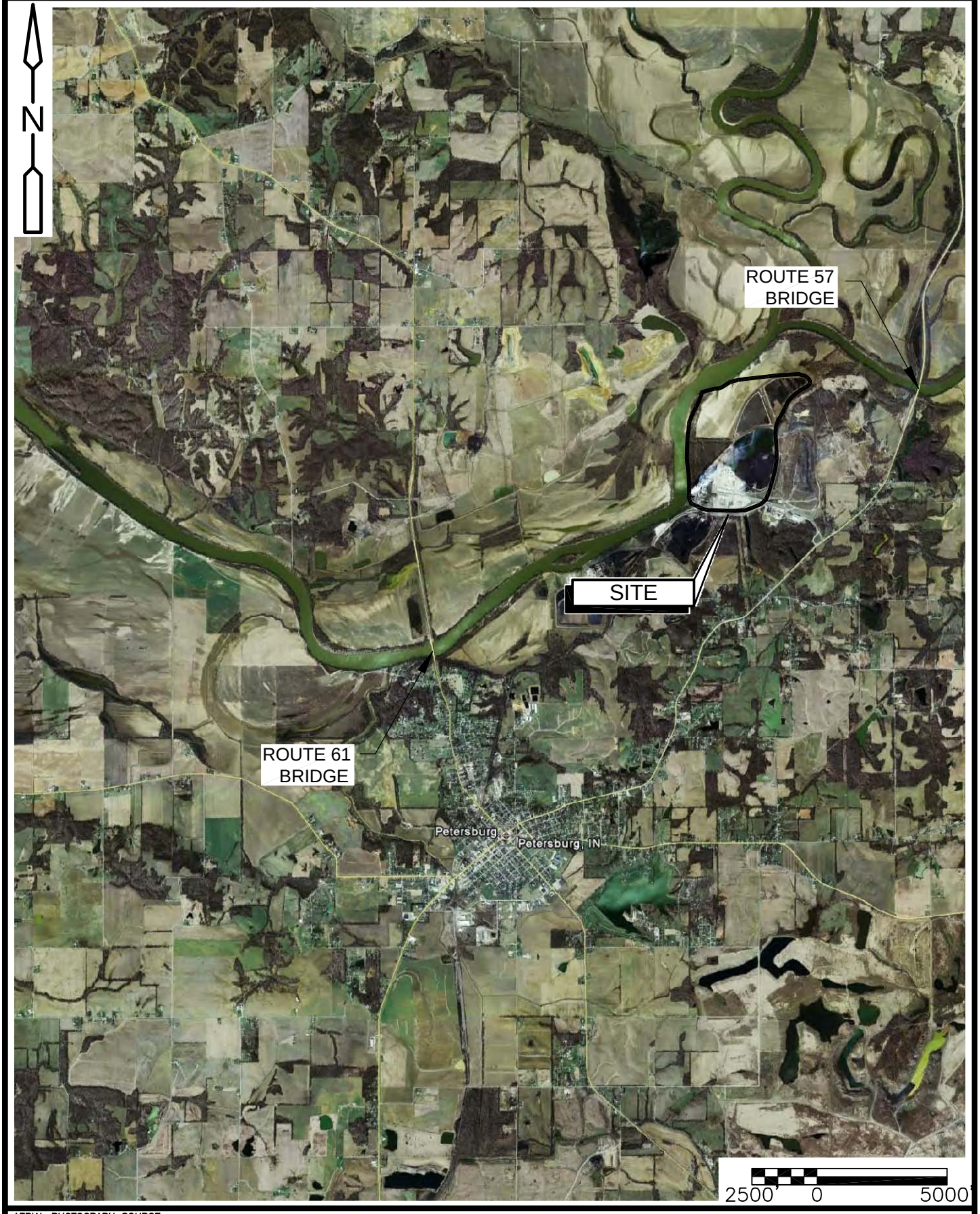

AERIAL PHOTOGRAPH SOURCE:
GOOGLE EARTH PRO.

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CRITICAL INFRASTRUCTURE MAP

JUNE 2010 FIGURE 2

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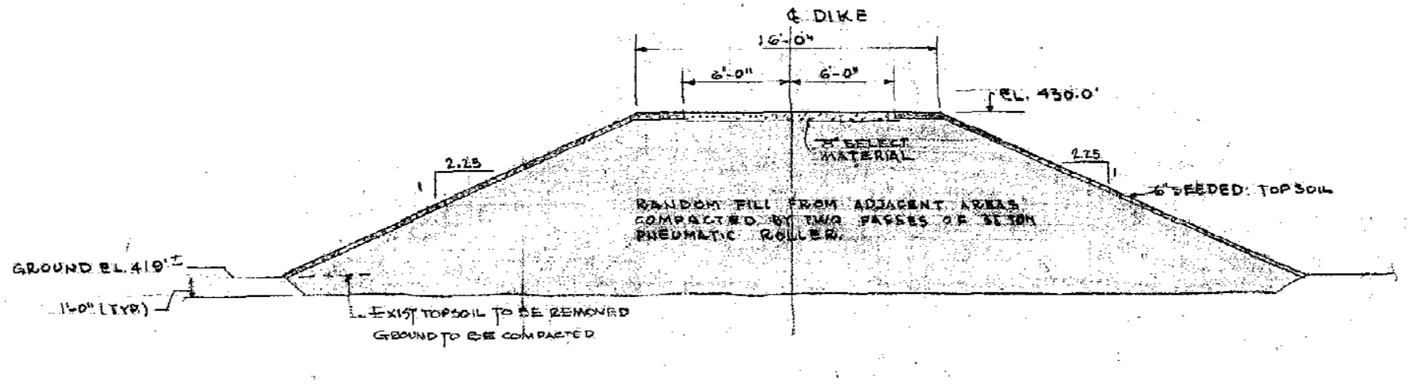
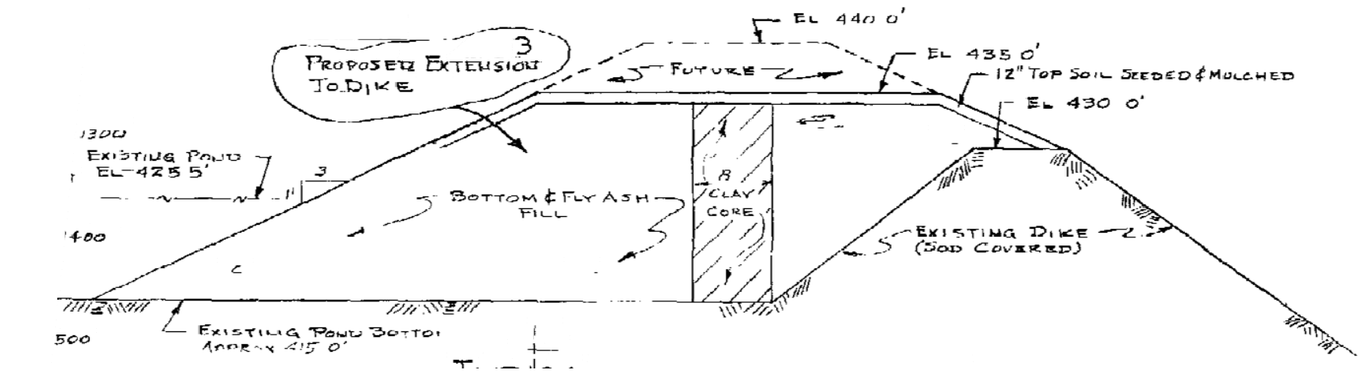
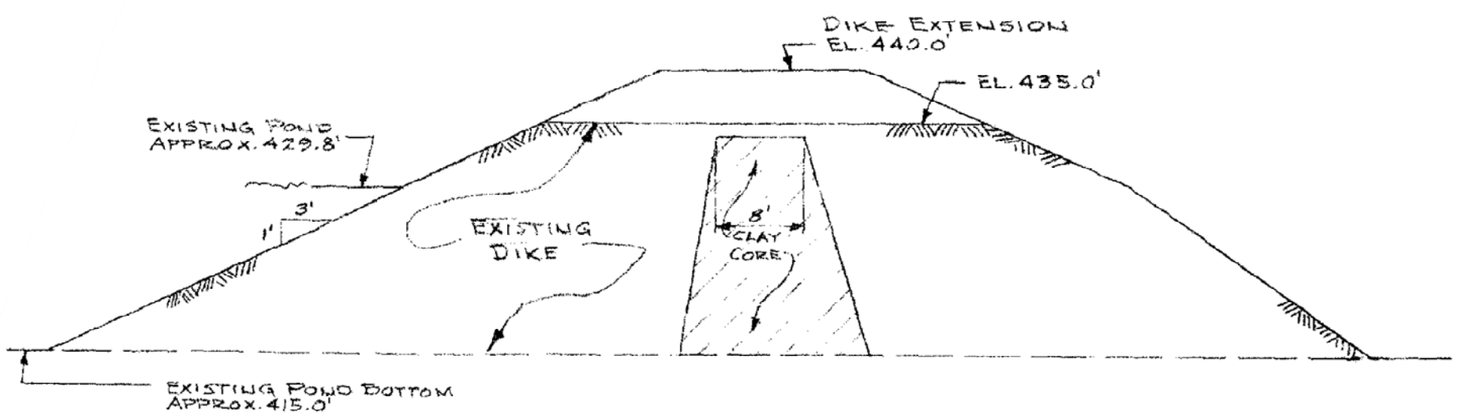


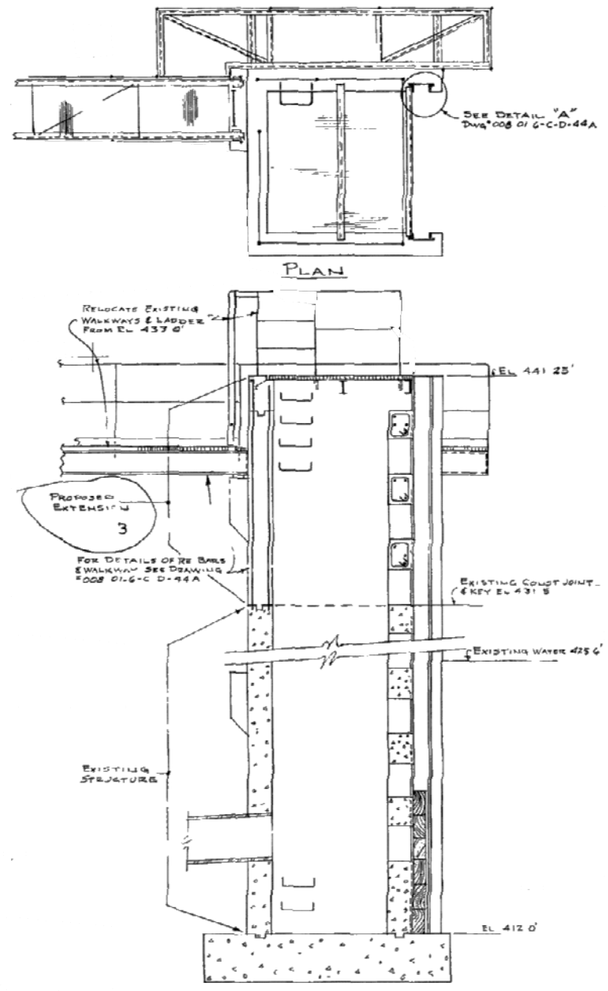
A. POND A - 1967 TYPICAL EMBANKMENT CROSS-SECTION



B. POND A - TYPICAL EMBANKMENT CROSS-SECTION OF 1979 EXPANSION



C. POND A - TYPICAL EMBANKMENT CROSS-SECTION OF 1982 EXPANSION



D. DETAIL OF POND A OUTLET STRUCTURE

NOTES:

1. TYPICAL CROSS-SECTION A FROM IPL DRAWING 008-01-6-Y-D-40R DATED 4/10/67
2. TYPICAL CROSS-SECTION B AND DETAIL OF OUTLET STRUCTURE FROM IPL DRAWING 008-00-6-Y-D-42A DATED 10/05/79
3. TYPICAL CROSS-SECTION C FROM IPL DRAWING 008-00-6-Y-D-42A DATED 4/30/82

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TYPICAL CROSS-SECTIONS POND A & POND A-DISCHARGE
JUNE 2010 FIGURE 3

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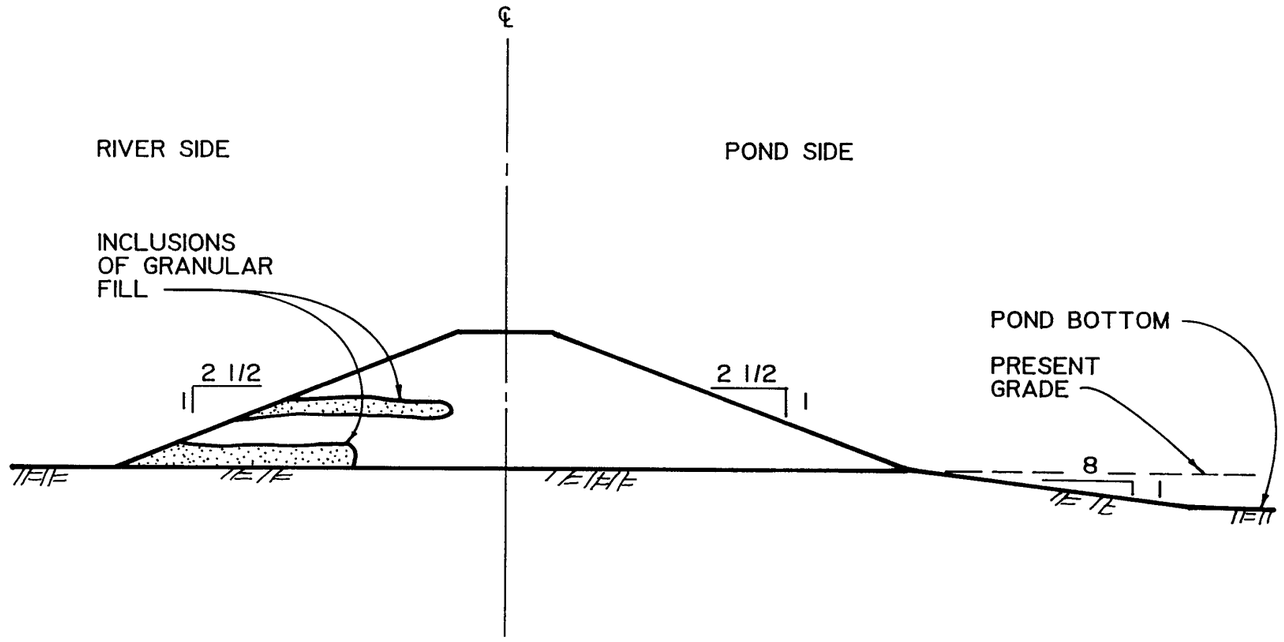
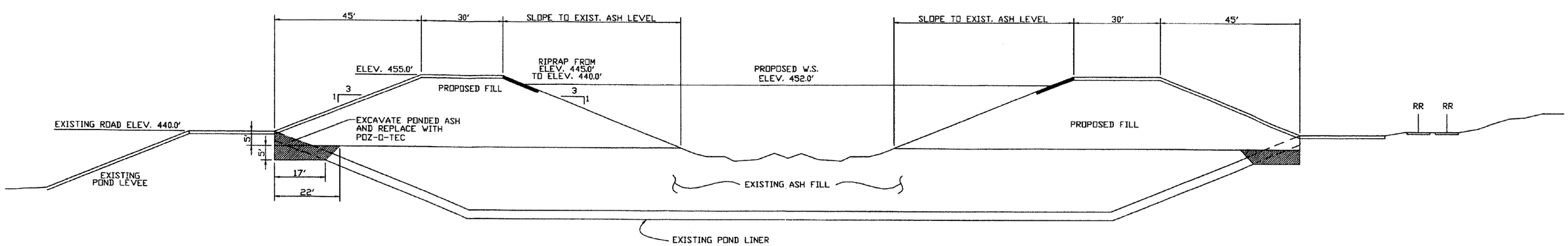


A. POND B - 1986 TYPICAL EMBANKMENT CROSS-SECTION



B. POND B & POND C - TYPICAL CROSS-SECTION OF 1999 EXPANSION

NOTES:

1. TYPICAL CROSS–SECTION A FROM GEOTECHNICAL REPORT PREPARED BY ATEC ASSOCIATES, INC., MARCH 26, 1986.

2. TYPICAL CROSS–SECTION B FROM IPL SKETCH No. C–2 DATED MARCH 11, 1998.

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TYPICAL CROSS-SECTIONS POND B & POND C
JUNE 2010 FIGURE 4

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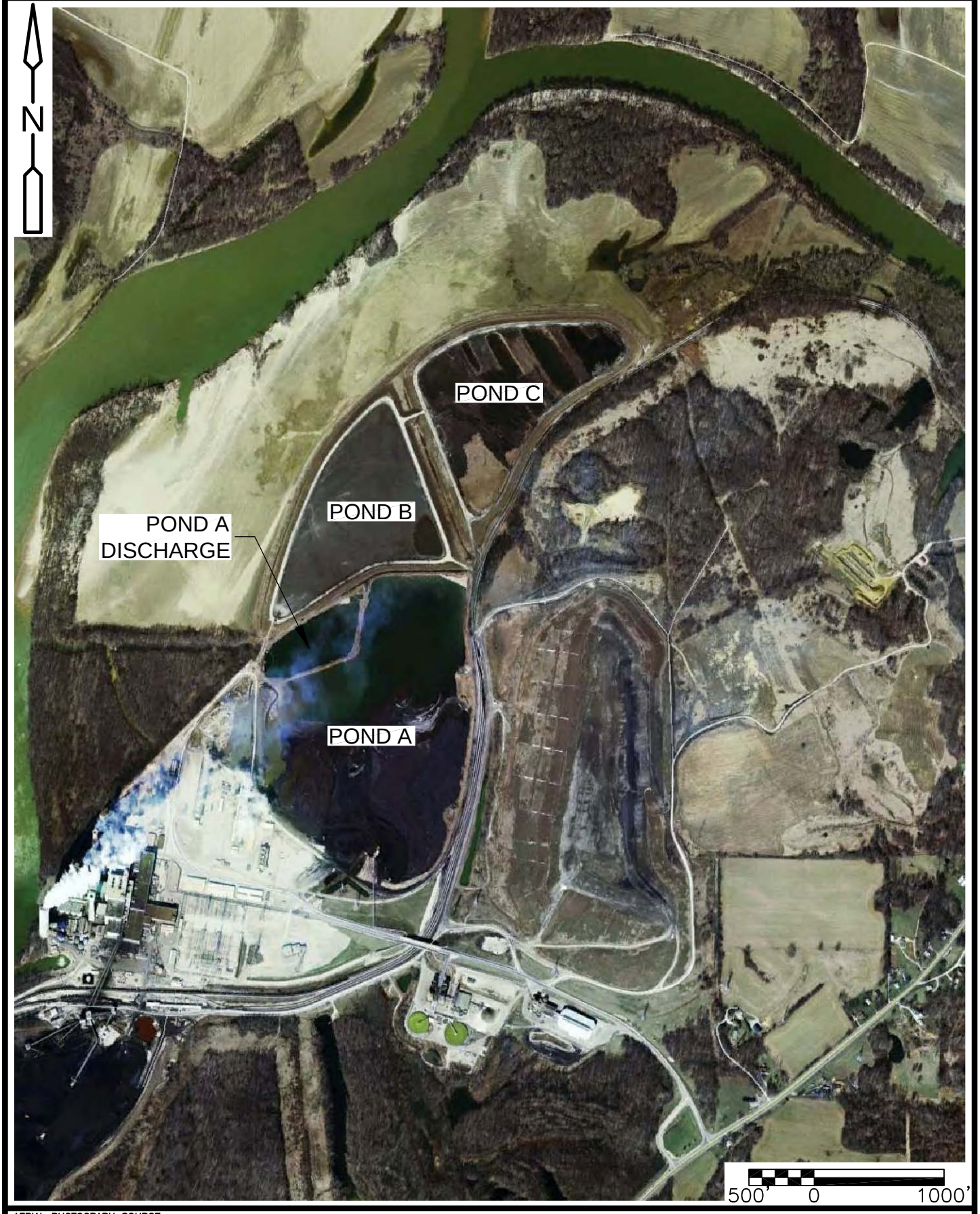

AERIAL PHOTOGRAPH SOURCE:
GOOGLE EARTH PRO.

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AERIAL MAP

JUNE 2010

FIGURE 5

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LEGEND:

2 PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM OCTOBER 12, 2009 PLANT LAYOUT DRAWING PREPARED BY IPL

POND C

POND B

POND A DISCHARGE

POND A

MATCH LINE (SEE FIGURE 6B)

GRAVEL

V.E. 420.3

N

125' 0 250'

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PHOTOGRAPH LOCATION PLAN
JUNE 2010 FIGURE 6A

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POND B

MATCH LINE (SEE FIGURE 6A)

POND A DISCHARGE

POND A

APPROXIMATE LOCATION OF DIVIDER EMBANKMENT

GRAVEL

PAVED PARKING

TANKS

PIPES

STORAGE

V.E. 430.9

V.E. 432.5

V.E. 431.34

V.E. 431.01

V.E. 438.26

V.E. 437.1

N

LEGEND:

2 PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM OCTOBER 12, 2009 PLANT LAYOUT DRAWING PREPARED BY IPL

125' 0 250'

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PHOTOGRAPH LOCATION PLAN
JUNE 2010 FIGURE 6B

PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_Petersburg\03 Reports and Studies\09 CADD Figures and Graphics\TPHFG06B.dwg

BI-WEEKLY ASH POND(S) INSPECTION RECORD

This record is completed on a bi-weekly basis after inspection is completed. 4/5/2010

Ash Pond Description (Name/ID)	Date	Erosion Along Crest or Embankment Slopes (Y/N)	Appearance of Sinkholes or Failure (Y/N)	Tension Cracks Along Crest or Slope Face (Y/N)	Presence of Vegetation Cover Along the Embankment Slopes (Y/N)	Changes in Dike Alignment (Y/N)	Appearance of Erosion/Deterioration Around Outlet Structures (Y/N)	Description of Current Operational Conditions (Normal/ Abnormal)	Initials: Authorized Supervisor	Initials: Personnel
A	4/5	N	N	N	Y	N	N	N	EAL	
B	4/5	N	N	N	Y	N	N	N	EAL	
C	4/5	N	N	N	Y	N	N	N	EAL	
				Pond C EAST SIDE HOLDING WATER						
				RAINED SATURDAY						
				LOWER ROAD TOO WET TO TRAVEL						
				DISCHARGE PIPE OK						
				NEED TO CLEAN MATERIAL @ DISCHARGE						

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TYPICAL BI-WEEKLY INSPECTION CHECKLIST

JUNE 2010

FIGURE 7

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Appendix A
USEPA Coal Combustion Dam Inspection Checklist Forms

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	IPL Petersburg Generating Station	Date:	May 3, 2010
Unit Name:	Pond A	Operator's Name:	Indianapolis Power & Light Company
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Michael Smith, Michael Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	see note 1		18. Sloughing or bulging on slopes?		x
2. Pool elevation (operator records)?	436.5		19. Major erosion or slope deterioration?	x	
3. Decant inlet elevation (operator records)?	436.5		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?		x
5. Lowest dam crest elevation (operator records)?	440.0		Is water exiting outlet, but not entering inlet?		x
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	x	
7. Is the embankment currently under construction?	x		21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		x	From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)		x	At isolated points on embankment slopes?	x	
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?	x		Over widespread areas?		x
12. Are decant trashracks clear and in place?	x		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?	x	
17. Cracks or scarps on slopes?	x		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Inspections performed by plant personnel every two weeks. Semi-annual detailed inspection by independent consultant.
2. through 5. No operating records.
7. IPL widening south and west interior slope with ash, filter fabric and riprap armor.
8. Drawings indicate topsoil removed. Topsoil and vegetation not removed during present construction.
10. Cracks between existing interior slope and new ash placed on south and west embankment.
11. Low spots on west embankment crest from excavator work.
17/19. Large tractor ruts from mowing operation.
21. Piping of water from unknown conduit in south embankment eroding interior slope and flow is clear.
23. Pond A - Discharge is located at exterior toe of Pond A northwest embankment and Pond B south embankment.

n/a = Not Available
d/n/a = Does Not Apply

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0002887 INSPECTOR Michael Smith
Michael Schumaker
Date May 3, 2010

Impoundment Name Pond A
Impoundment Company Indianapolis Power & Light Company (IPL)
EPA Region 5
State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Pond A
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	X	
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: Fly Ash, bottom ash, boiler slag, waste water, drainage

Nearest Downstream Town : Name Petersburg, Indiana
Distance from the impoundment 2.6 miles south
Impoundment Location: Longitude 87 Degrees 14 Minutes 41.71 Seconds W
Latitude 38 Degrees 31 Minutes 55 Seconds N
State Indiana County Pike

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

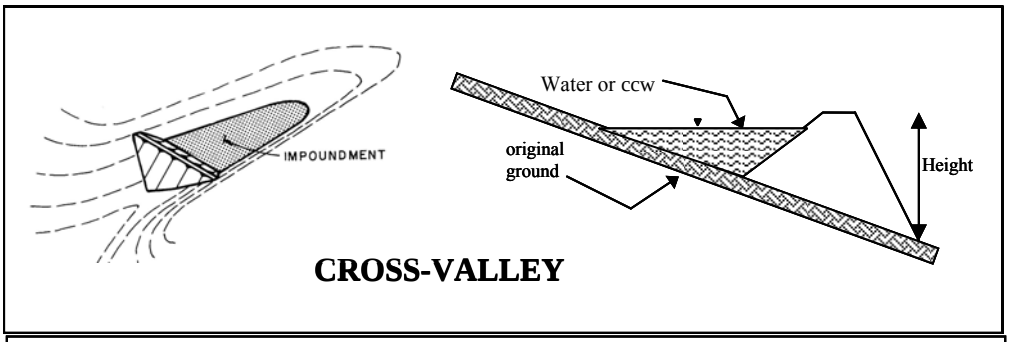
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

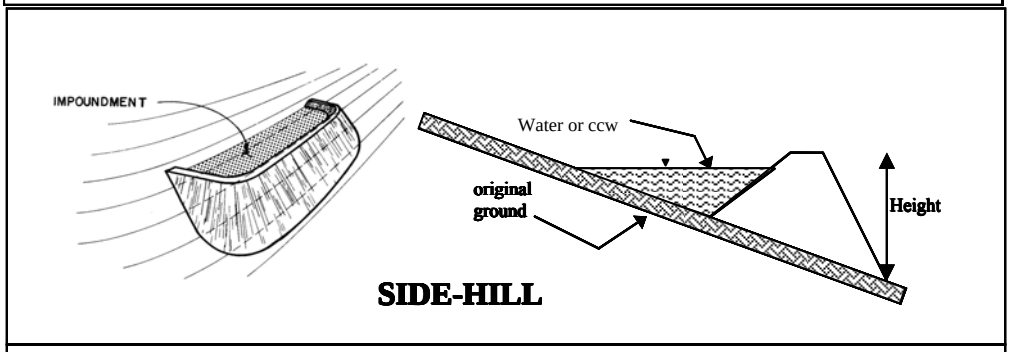
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

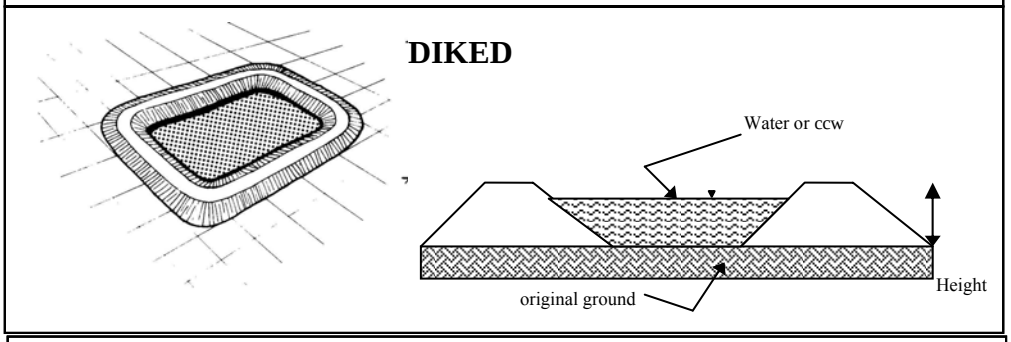
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

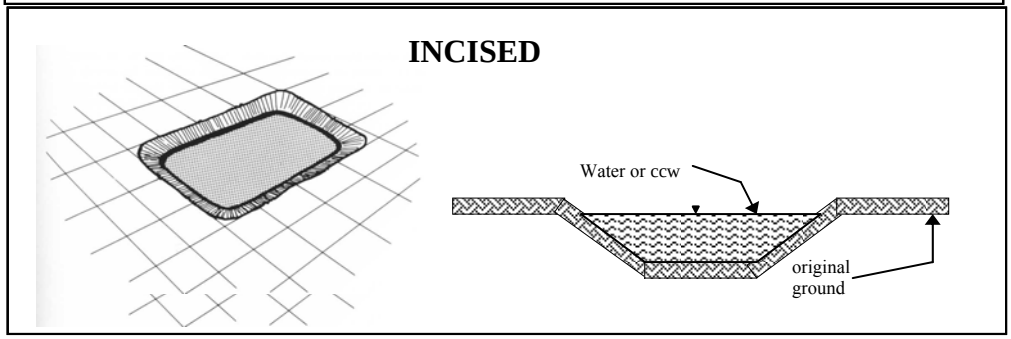
A.) A breach would have an environmental impact on the White River and downstream area.

CONFIGURATION:









_____ Cross-Valley
__X__ Side-Hill
_____ Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

Embankment Height 6 feet
Pool Area 67 acres
Current Freeboard 3 feet

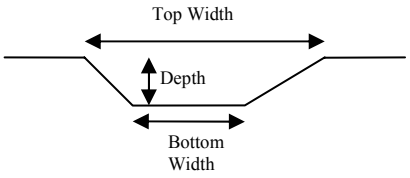
Embankment Material Compacted Fill & Ash
Liner None
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

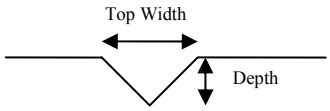
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____

TRAPEZOIDAL



TRIANGULAR



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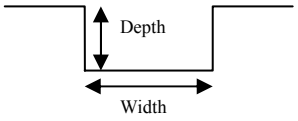

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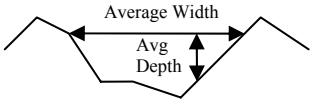
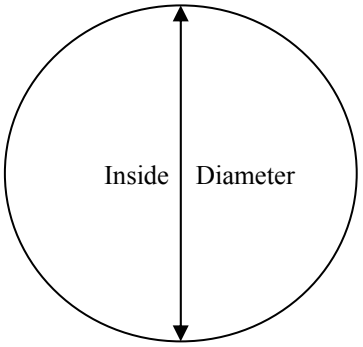


X **Outlet**

2 - 30" inside diameter



Material
X corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

_____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

_____

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Professional Engineers at IPL Corporate
_____

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO __X____

If So When? _____

IF So Please Describe: ___

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	IPL Petersburg Generating Station	Date:	May 3, 2010
Unit Name:	Pond A - Discharge	Operator's Name:	Indianapolis Power & Light Company
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Michael Smith, Michael Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	see note 1		18. Sloughing or bulging on slopes?		x
2. Pool elevation (operator records)?	433.4		19. Major erosion or slope deterioration?		x
3. Decant inlet elevation (operator records)?	415.9		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?		x
5. Lowest dam crest elevation (operator records)?	440.0		Is water exiting outlet, but not entering inlet?		x
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	x	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		x	From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)		x	At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?		x	From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?	x	
17. Cracks or scarps on slopes?		x	24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Inspections performed by plant personnel every two weeks. Semi-annual detailed inspection by independent consultant.
2. through 5. No operating records.
8. Drawings indicate topsoil removed.
23. Water level approximately at El. 415.5 in Lick Creek at exterior toe of west embankment.

n/a = Not Available
d/n/a = Does Not Apply

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0002887 INSPECTOR Michael Smith, Michael Schumaker

Date May 3, 2010

Impoundment Name Pond A - Discharge

Impoundment Company Indianapolis Power & Light Company (IPL)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264, Indianapolis, IN 46204

Name of Impoundment Pond A - Discharge

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: Fly Ash, bottom ash, boiler slag, waste water, drainage

Nearest Downstream Town : Name Petersburg, Indiana

Distance from the impoundment 2.6 miles south

Impoundment Location: Longitude 87 Degrees 14 Minutes 47.86 Seconds W

Latitude 38 Degrees 32 Minutes 0.73 Seconds N

State Indiana County Pike

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

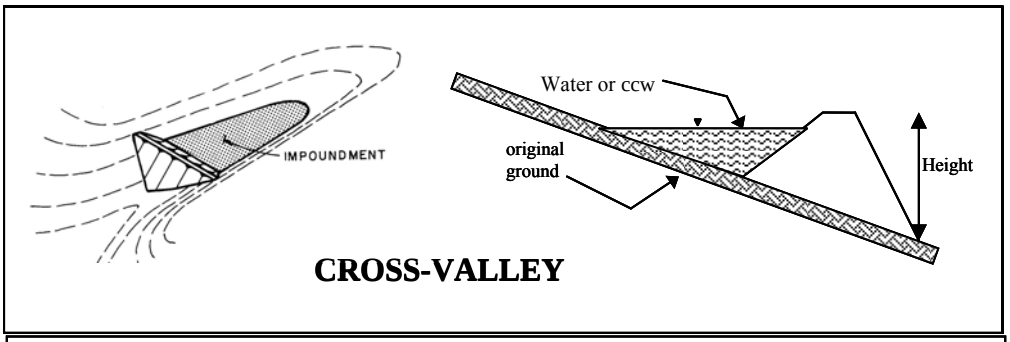
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

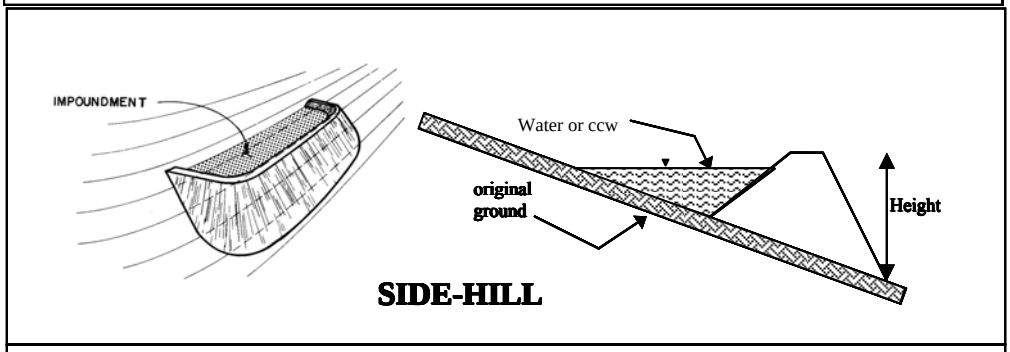
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

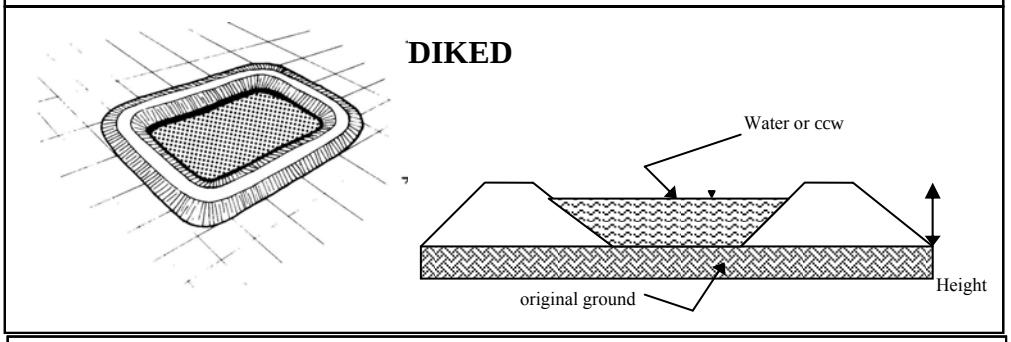
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

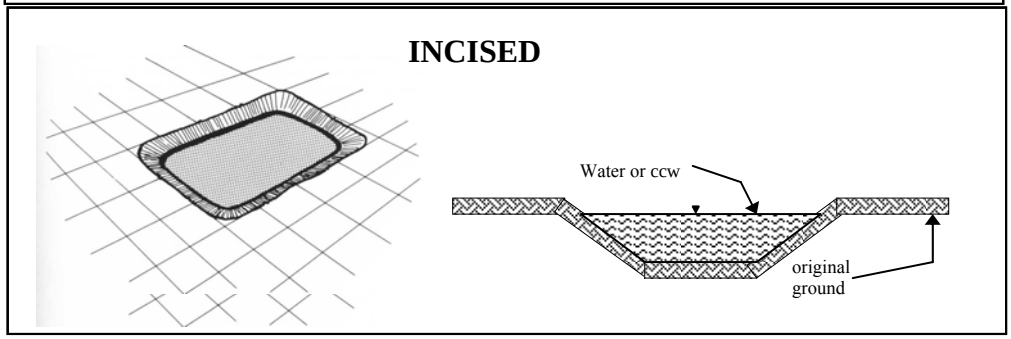
A.) A breach would have an environmental impact on the White River and downstream area.
B.) A failure or misoperation of Pond A - Discharge could cause Pond A to fail.

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

Embankment Height 26 feet
Pool Area 5 acres
Current Freeboard 6.6 feet

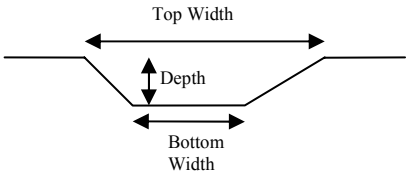
Embankment Material Compacted Fill & Ash
Liner None
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

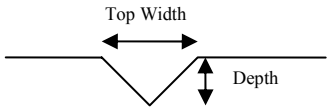
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width

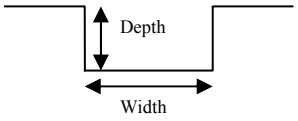
TRAPEZOIDAL



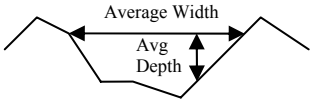
TRIANGULAR



RECTANGULAR

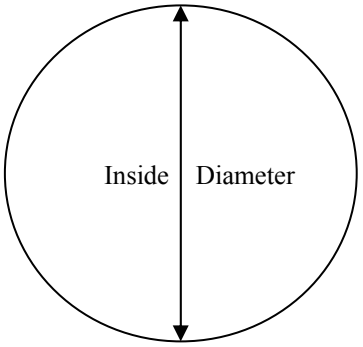


IRREGULAR



X **Outlet**

1 - 24" inside diameter



Material
_____ corrugated metal
_____ welded steel
X concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) Outlet control structure with stoplogs.

The Impoundment was Designed By Professional Engineers at IPL Corporate

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO __X____

If So When? _____

IF So Please Describe: ___

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	IPL Petersburg Generating Station	Date:	May 3, 2010
Unit Name:	Pond B	Operator's Name:	Indianapolis Power & Light Company
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Michael Smith, Michael Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	see note 1		18. Sloughing or bulging on slopes?		x
2. Pool elevation (operator records)?	452.0		19. Major erosion or slope deterioration?	x	
3. Decant inlet elevation (operator records)?	437.0		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	d/n/a	
5. Lowest dam crest elevation (operator records)?	455.0		Is water exiting outlet, but not entering inlet?	d/n/a	
6. If instrumentation is present, are readings recorded (operator records)?		x	Is water exiting outlet flowing clear?	n/a	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		x	From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)		x	At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?	x	
12. Are decant trashracks clear and in place?		x	From downstream foundation area?	x	
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?	x	
17. Cracks or scarps on slopes?	x		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Inspections performed by plant personnel every two weeks. Semi-annual detailed inspection by independent consultant.
2 through 6. No operating records. Water is currently not being pumped into the pond.
6. Piezometers installed April 22, 2010.
8. Drawings indicate topsoil removed and clay excavated for original embankment.
9. Tree stumps up to 6-inch-diameter observed on embankment.
17/19. Minor tractor ruts and erosion from mowing operation.
20. Outlet under water at Pond A.
21. Seepage around perimeter of embankment at toe of vertical expansion from El. 440 to El. 455. Sporadic white and black clouding and iron staining in seepage water.
23. Heavy rainfall events prior to site visit. Open field at west toe wet/flooded. Pond A and Pond A - Discharge located at south embankment exterior toe.

n/a = Not Available
d/n/a = Does Not Apply

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0002887 INSPECTOR Michael Smith, Michael Schumaker

Date May 3, 2010

Impoundment Name Pond B

Impoundment Company Indianapolis Power & Light Company (IPL)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264, Indianapolis, IN 46204

Name of Impoundment Pond B

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	_____	X

IMPOUNDMENT FUNCTION: Fly Ash, bottom ash, boiler slag, waste water, drainage

Nearest Downstream Town : Name Petersburg, Indiana

Distance from the impoundment 2.6 miles south

Impoundment Location:
Longitude 87 Degrees 14 Minutes 42.57 Seconds W
Latitude 38 Degrees 32 Minutes 11.03 Seconds N
State Indiana County Pike

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

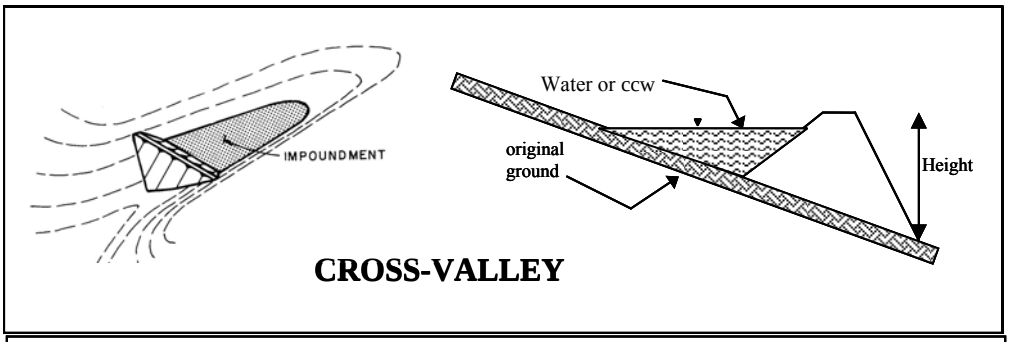
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

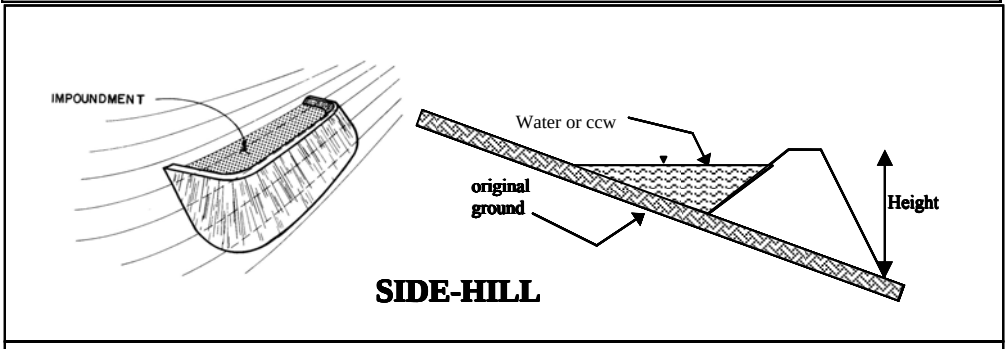
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

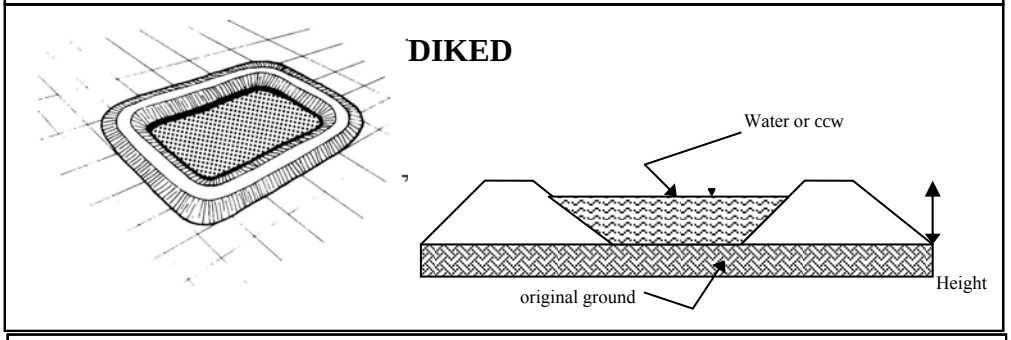
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

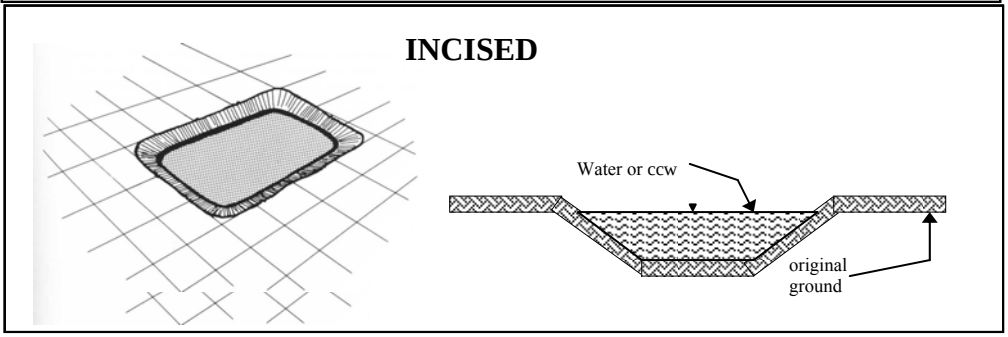
A.) A breach would have an environmental impact on the White River and downstream area.
B.) A failure or misoperation of Pond B could damage main transmission towers.

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

Embankment Height 37 feet
Pool Area 35 acres
Current Freeboard 3 feet

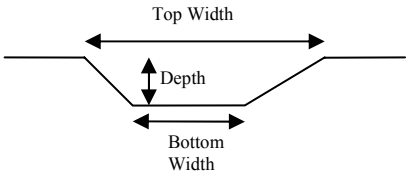
Embankment Material Compacted Fill & Ash
Liner None
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

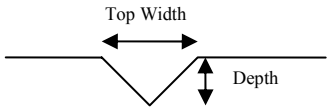
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____

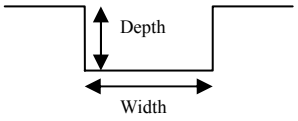
TRAPEZOIDAL



TRIANGULAR



RECTANGULAR



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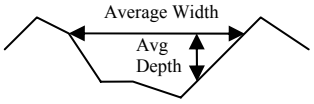
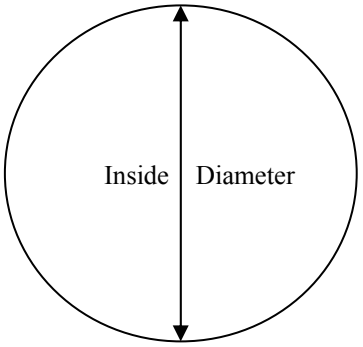


X **Outlet**

1 - 30" inside diameter



Material
X corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

_____

Is water flowing through the outlet? YES _____ NO X

_____ **No Outlet**

_____

X **Other Type of Outlet** (specify) Outlet control structure with stoplogs.

The Impoundment was Designed By Professional Engineers at IPL Corporate

_____

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _X_____ NO __ _____

If So When? 1999 to present

IF So Please Describe: ____

Seepage around perimeter of embankment at toe of vertical expansion from El. 440 to El. 455. Sporadic white and black clouding and iron staining in seepage water.

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	IPL Petersburg Generating Station	Date:	May 4, 2010
Unit Name:	Pond C	Operator's Name:	Indianapolis Power & Light Company
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Michael Smith, Michael Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	see note 1		18. Sloughing or bulging on slopes?		x
2. Pool elevation (operator records)?	see note 2		19. Major erosion or slope deterioration?	x	
3. Decant inlet elevation (operator records)?	441.0		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?		x
5. Lowest dam crest elevation (operator records)?	455.0		Is water exiting outlet, but not entering inlet?		x
6. If instrumentation is present, are readings recorded (operator records)?		x	Is water exiting outlet flowing clear?	n/a	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		x	From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)		x	At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?	x	
12. Are decant trashracks clear and in place?		x	From downstream foundation area?	x	
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?	x	
17. Cracks or scarps on slopes?	x		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Inspections performed by plant personnel every two weeks. Semi-annual detailed inspection by independent consultant.
2. Pond C currently inactive. Some areas excavated. Ponded water ranges from approximately El. 447 to El. 452. Ponded water at outlet structure approximately El. 448.4.

2 through 6. No operating records.

6. Piezometers installed April 22, 2010.

8. Drawings indicate topsoil removed and clay excavated for original embankment.

17/19. Minor tractor ruts and erosion from mowing operation.

20. Outlet was obscured by thick vegetation.

21. Seepage around perimeter of embankment at toe of vertical expansion from El. 440 to El. 455. Sporadic white and black clouding and iron staining in seepage water.

23. Heavy rainfall events prior to site visit. Open field at north/northwest toe flooded/wet, inside of north/northwest bench (El. 440) wet, and east drainage ditch full.

n/a = Not Available
d/n/a = Does Not Apply

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0002887 INSPECTOR Michael Smith, Michael Schumaker

Date May 4, 2010

Impoundment Name Pond C

Impoundment Company Indianapolis Power & Light Company (IPL)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264, Indianapolis, IN 46204

Name of Impoundment Pond C

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	_____	X

IMPOUNDMENT FUNCTION: Fly Ash, bottom ash, boiler slag, waste water, drainage

Nearest Downstream Town : Name Petersburg, Indiana

Distance from the impoundment 2.6 miles south

Impoundment Location:
Longitude 87 Degrees 14 Minutes 27.85 Seconds W
Latitude 38 Degrees 32 Minutes 21.18 Seconds N
State Indiana County Pike

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

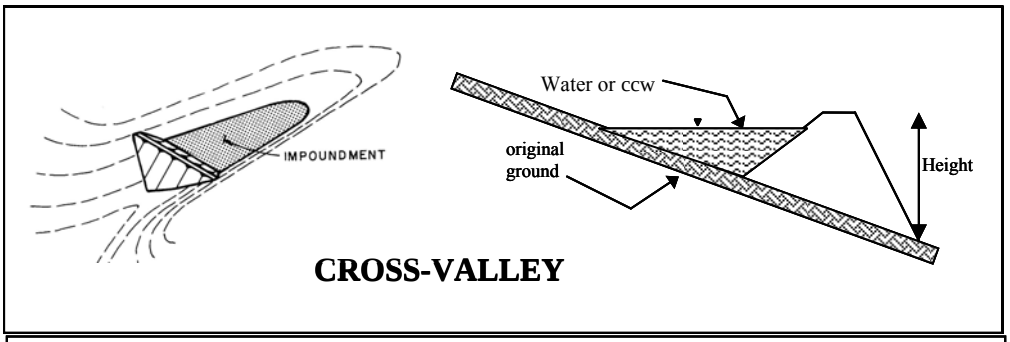
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

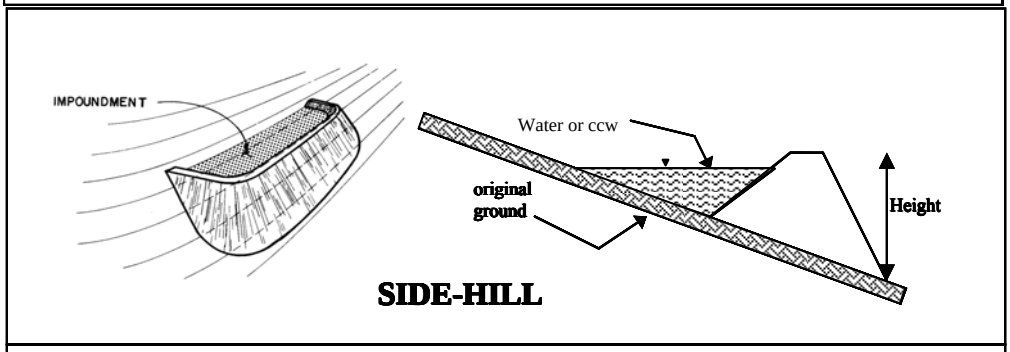
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

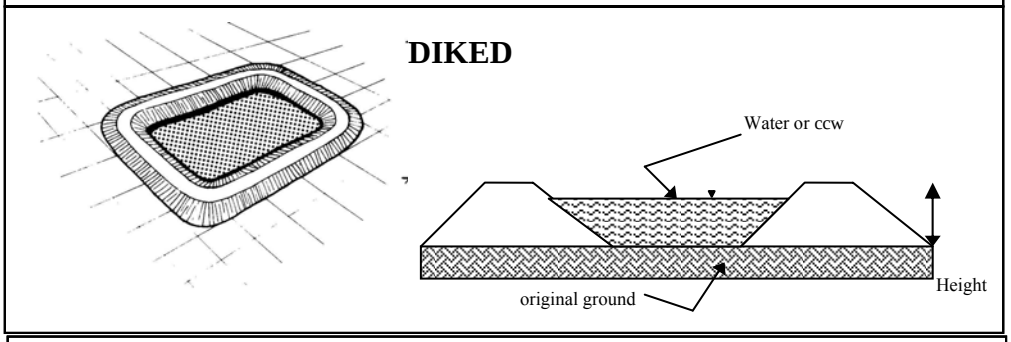
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

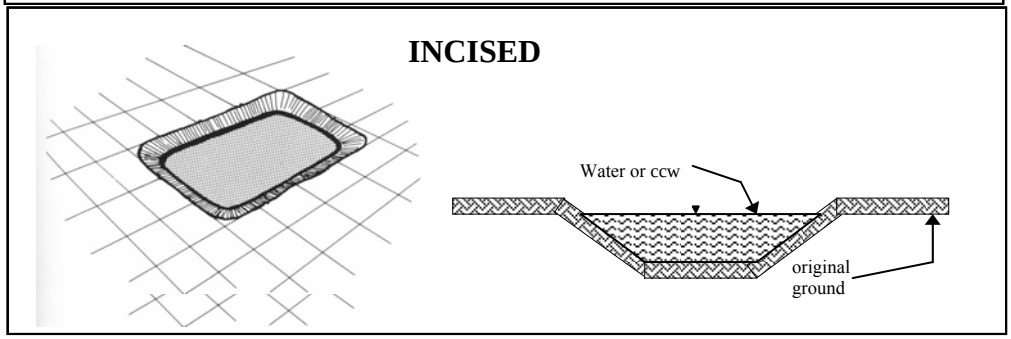
A.) A breach would have an environmental impact on the White River and downstream area.
B.) A failure or misoperation of Pond C could damage main transmission towers.
C.) A failure or misoperation of Pond C could damage the adjacent railroad line.

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

Embankment Height 37 feet
Pool Area 30 acres
Current Freeboard 3 to 8 feet

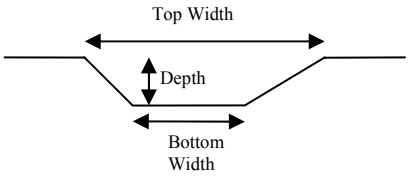
Embankment Material Compacted Fill & Ash
Liner None
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width
_____

TRAPEZOIDAL



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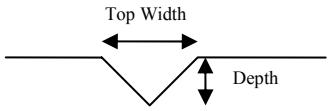

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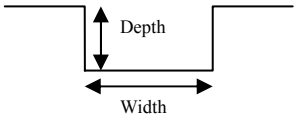

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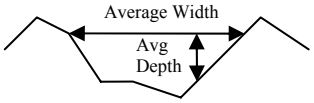
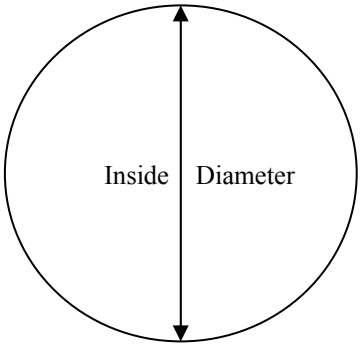


X **Outlet**

1 - 30" inside diameter



Material
X corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

_____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

_____

X **Other Type of Outlet** (specify) Outlet control structure with stoplogs.

The Impoundment was Designed By Professional Engineers at IPL Corporate

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _X_____ NO __ _____

If So When? 1999 to present

IF So Please Describe: ____

Seepage around perimeter of embankment at toe of vertical expansion from El. 440 to El. 455. Sporadic white and black clouding and iron staining in seepage water.

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Appendix B
Photographs

1. Pond A – East embankment crest, looking south.

2. Overview of Pond A and east slope of divider embankment, looking west

CDM	INDIANAPOLIS POWER & LIGHT COMPANY PETERSBURG GENERATING STATION PETERSBURG, IN
CDM Project No.: 76658.1801.034.SIT.PETER	May 3 and 4, 2010

3. Pond A – East embankment crest, looking south.

4. Pond A – East embankment crest, looking north

5. Pond A rim ditch, looking north.

6. Pond A rim ditch, looking southeast.

7. Pond A rim ditch looking west at sluice pipes.

8. Close up of two (2) 36-inch-diameter and five (5) 10-inch-diameter DI sluice pipes.

9. Pond A – South embankment crest, looking east.

10. Pond A – South embankment crest, looking west. Note access ramp excavated in crest to access the sluice pipes.

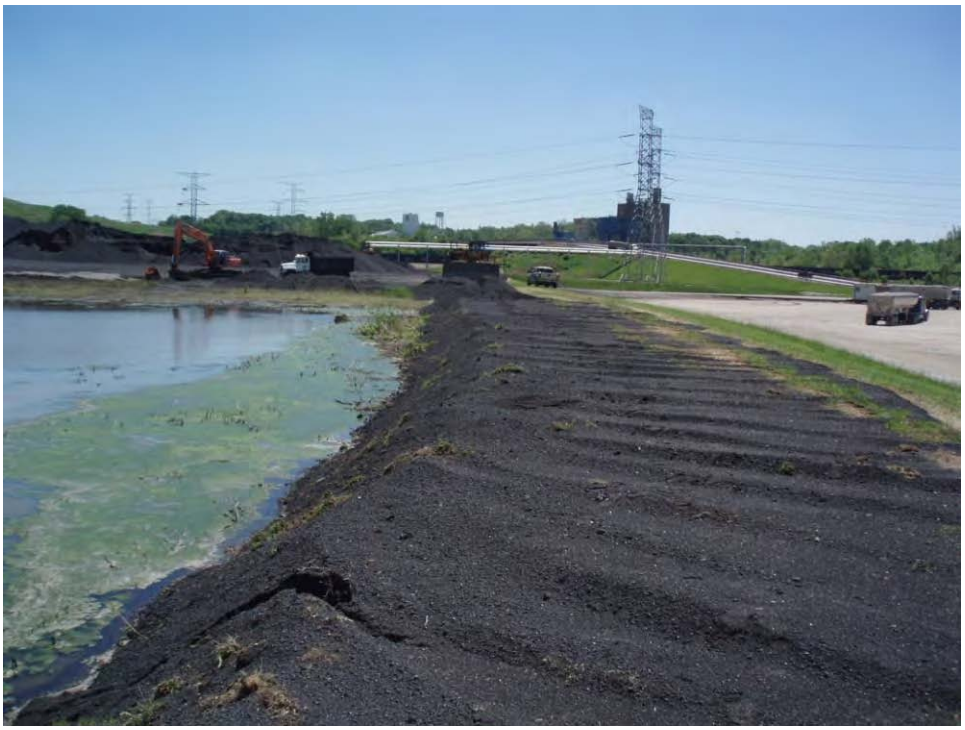
11. Pond A – South embankment looking southeast.

12. Pond A – South embankment crest, looking northwest.

13. Pond A – South embankment exterior slope, looking northwest.

14. Pond A – South embankment crest, looking northwest.

15. Pond A – Active erosion/piping of south embankment interior slope from unknown water source. Water was clear. Eroded area 5'Wx8'Lx3.5'D. IPL personnel were trying to determine source of flow.



16. Pond A – South embankment crest, looking southeast at recently placed ash material. Note existing embankment was not cleared or grubbed before placing material.

17. Pond A – South embankment crest, looking northwest at recently placed ash. Note existing embankment was not cleared or grubbed before placing material.

18. Pond A – Surface cracks in recently placed ash material on south embankment crest.

19. Pond A – West embankment exterior slope, looking north at mowing operation.

20. Pond A – West embankment interior slope, looking south at one (1) 12-inch-diameter DI pipe and two (2) 8-inch-diameter steel pipes from plant.

21. Pond A – West embankment interior slope and crest, looking north

22. Pond A – West embankment exterior slope, looking north.

23. Pond A – West embankment exterior slope, looking north at tractor ruts.

24. Drainage ditch at toe of Pond A west embankment. Note ditch has sparse vegetation.

25. Pond A – Saturated area on west embankment exterior slope.

26. Pond A – West embankment exterior slope, looking north at large tractor ruts and excavator tracks.

27. Pond A – West embankment exterior slope, looking north at large tractor ruts and excavator tracks.

28. Pond A – West embankment exterior slope, looking south.

29. Pond A – West embankment interior slope looking north at embankment work.

30. Pond A – West embankment interior slope, looking north at excavator flattening vegetation before placing ash material. Note an unknown 24-inch-diameter RC pipe in the embankment was being covered with ash.

31. Pond A – West embankment interior slope, looking north at rough embankment grading. Note Mirafi geofabric does not extend to the toe of the slope.

32. Pond A – West embankment interior slope, looking south at rough embankment grading

33. Pond A – 24-inch-diameter RC pipe being covered by ash.

34. Pond A – Former location of Lick Creek at west embankment exterior toe.

35. Pond A – Looking east at inactive 4-, 6-, 8-, and 15-inch-diameter sluice pipes from unknown origin. Use unknown.

36. Pond A – West embankment interior slope, looking southeast at two (2) 24-inch-diameter RCP from plant super sumps and one (1) 4-inch-diameter DI pipe from unknown origin.

37. North slope of divider embankment between Pond A and Pond A – Discharge, looking east.

38. Crest of divider embankment between Pond A and Pond A – Discharge, looking east.

39. South slope of divider embankment between Pond A and Pond A – Discharge, looking east.

40. Surficial erosion under riprap on north slope of divider embankment between Pond A and Pond A – Discharge.

41. Overview of Pond A – Discharge recycle pump station and outlet structure, looking west

42. Overview of Pond A – Discharge, looking northeast at inlet pipes from Pond A.

43. Crest of divider embankment between Pond A and Pond A – Discharge, looking southwest.

44. Crest of divider embankment between Pond A and Pond A – Discharge, looking northeast.

45. Inlet of two (2) 36-inch-diameter CM pipes from Pond A to Pond A - Discharge. Note pipes have T's at inlets and the floating boom to reduce the potential for surface debris from clogging pipes.

46. Crest of divider embankment between Pond A and Pond A – Discharge, looking southwest.

47. Outlet of two (2) 36-inch-diameter CMP outlet pipes from Pond A to Pond A – Discharge.

48. Overview of Pond A north interior slope, looking northeast.

49. Pond A – North embankment crest and Pond B – South embankment exterior slope, looking west.

50. Pond B – North embankment exterior slope, looking northwest between Pond B and Pond C.

51. Pond B – South embankment exterior slope, looking west.

52. Overview of Pond A, looking southwest at Petersburg Generating Station.

53. Pond B – South embankment crest, looking west.

54. Pond B – East embankment crest, looking north.

55. Pond B – East embankment exterior slope, looking north.

56. Pond B – Overview of outlet control structure with stoplogs, looking east.

57. Pond B – Overview of outlet control structure with stoplogs, looking east.

58. Pond B – South embankment exterior slope, looking west at tractor rutting and minor surficial erosion. Note change in vegetation at mid slope and stabilized FGD material very soft.

59. Pond B – South embankment exterior slope, looking west. Note change in vegetation at mid slope and stabilized FGD material is very soft.

60. Pond B – South embankment exterior slope, looking north at 4'Wx1'D erosion feature.

61. Pond B – South embankment exterior slope looking at bare spots of very soft, fine grained stabilized FGD.

62. Pond A – Discharge north crest and Pond B south embankment toe, looking west.

63. Pond B – South embankment exterior slope, looking southwest at possible seepage at toe.

64. Pond A – Discharge north embankment crest and Pond B south embankment toe, looking northeast.

65. Pond A – Discharge, looking southwest at outlet structure and recycle pump station.

66. Pond B – South embankment exterior slope, looking northeast.

67. Pond B – South embankment crest, looking northeast.

68. Pond A – Discharge, looking west at discharge canal to the White River.

69. Pond A – Discharge, looking south at 24-inch-diameter RCP outlet pipe.

70. Pond A – Discharge, southwest embankment exterior slope looking at steep slope above outfall repaired recently with riprap.

71. Pond A – Discharge, overview of downstream area from outfall.

72. Pond A – Discharge, looking south at inlet to outlet control structure.

73. Pond B – West embankment lower exterior slope, looking north at saturated area at toe of slope.

74. Pond B – West embankment, looking north at downstream area in flood plain. Note field area is saturated and wet from recent storm events.

75. Pond B – West embankment bench, looking north. Note inside of bench is wet from recent storm events.

76. Pond B – West embankment crest, looking north.

77. Pond B – West embankment upper exterior slope, looking north.

78. Overview of Pond B – West embankment, downstream area, looking west.

79. Pond B – West embankment bench, looking north at possible seep. Note area is soft and saturated.

80. Pond B – West embankment lower exterior slope, looking at 0.9-foot-diameter tree stump at toe.

81. Pond B – West embankment lower exterior slope, looking north.

82. Pond B – West embankment bench, looking north.

83. Pond B – West embankment upper exterior slope, looking north.

84. Overview of Pond B – West embankment, downstream area, looking northwest. Note field area is flooded from recent storm events.

85. Pond B – West embankment lower exterior slope, looking at over-steep area and surficial erosion at bench.

86. Pond B – West embankment upper exterior slope, looking at an 8-inch-diameter rodent hole.

87. Pond B – West embankment lower exterior slope, looking north at over-steep slope and tractor ruts near bench.

88. Pond B – West embankment lower exterior slope, looking southwest.

89. Pond B – West embankment bench, looking southwest.

90. Pond B – West embankment upper exterior slope, looking southwest.

91. Pond B – West embankment crest, looking southwest.

92. Overview of Pond B from northwest corner, looking southeast.

93. Pond B – North embankment crest, looking southeast.

94. Pond B – North embankment exterior slope, looking northwest.

95. Pond B – North embankment exterior slope, looking southeast.

96. Pond B – North embankment exterior slope looking northwest at tractor ruts, bare spots, very soft stabilized FGD.

97. Pond B – North embankment exterior slope, looking northwest.

98. Pond B – North embankment crest, looking northwest.

99. Pond C – West embankment crest, looking northeast.

100. Pond C – South embankment crest, looking southeast.

101. Pond C – West embankment upper exterior slope, looking northeast.

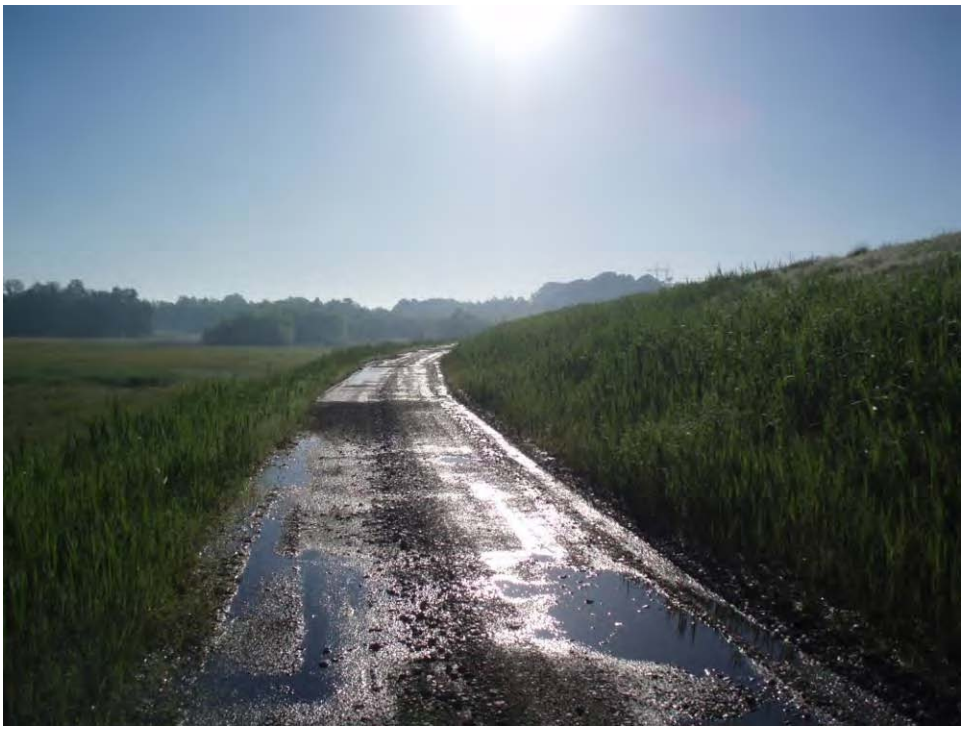
102. Pond C – West embankment bench, looking northeast.

103. Pond C – West embankment lower exterior slope, looking northeast.

104. Overview of Pond C from northeast corner, looking east.

105. Pond C – West embankment lower exterior slope, looking northeast.

106. Pond C – West Embankment lower exterior slope, looking southwest.



107. Pond C – West embankment bench, looking northeast.

108. Pond C – West embankment bench, looking southwest.

109. Pond C – West embankment upper exterior slope, looking northeast.

110. Pond C – West embankment upper exterior slope, looking southwest.

111. Pond C – West embankment crest, looking east.

112. Pond C – West embankment crest, looking west.

113. Pond C – West embankment bench, looking east.

114. Pond C – Wes embankment bench, looking west.

115. Pond C – West embankment lower exterior slope, looking at over-steepened area and tractor rutting at bench.

116. Pond C – West embankment bench, looking at active seepage located at toe of upper exterior slope. Note the white and black sheen in the water.

117. Pond C – West embankment lower exterior slope, looking west.

118. Pond C – West embankment bench, looking west.

119. Pond C – West embankment upper exterior slope, looking west.

120. Pond C – West embankment crest, looking west.

121. Pond C – North embankment crest, looking southeast.

122. Pond C – North embankment bench, looking at active seepage located at toe of upper exterior slope. Note the white sheen in the water.

123. Pond C – North embankment bench, looking northwest.

124. Pond C – North embankment, looking north at downstream area.

125. Pond C – North embankment bench, looking at active seepage located at toe of upper exterior slope. Note the iron staining in the water

126. Overview of Pond C from northeast corner, looking northwest.

127. Pond C – East embankment exterior slope and drainage ditch, looking southwest. Note water level in drainage ditch approximately 1.5′ below roadway and 5′-8′ tall vegetation on lower portion of the slope extending from northern corner to access ramp. Slope at drainage ditch is over-steepened.

128. Pond C –East embankment crest, looking southwest. Note tire rutting was observed in very soft stabilized FGD near the crest.

129. Pond C – East embankment exterior slope, looking at area of outlet pipe from outlet structure. Note water was flowing from outlet pipe into drainage ditch.

130. Pond C – East embankment exterior slope and drainage ditch, looking northeast.

131. Overview of area between Pond B and Pond C, looking northwest. Note area between embankments is the top of the original impoundment.

132. Pond C – Outlet structure with stoplogs, looking southwest. Note water level 6.6' below crest at outlet.

133. Pond C – East embankment interior slope, looking north at rim ditch to outlet structure.

134. Pond C – East embankment interior slope, looking southwest at rim ditch to outlet structure. Note water level 3′ below crest.

135. Pond C – East crest, looking at monitoring well installed by BT² on 4/23/10.

136. Pond C – East embankment crest, looking northeast.

137. Pond C – South embankment crest, looking northwest.

138. Pond C – South embankment exterior slope, looking northwest at area between Pond B and Pond C.

139. Pond C – South embankment exterior slope, looking southeast at area between Pond B and Pond C.

140. Pond C – South embankment exterior slope, looking northwest.

141. 24-inch-diameter CMP equalizer pipe from Pond C to Pond B. Note inlet has a T connection on the end of the pipe.

142. Inside of equalizer pipe at Pond C. Note approximately half of the pipe is filled ash.

143. Overview of Pond C, looking northeast.

144. Low area between Pond B and Pond C, looking north at embankment between two impoundments. Note the equalizer pipe runs through the embankment.

145. Pond C – South embankment exterior slope, looking southeast.

146. 24-inch-diameter CM equalizer pipe from Pond B to Pond C. Note inlet has a T connection on the end of the pipe and is filled with ash.

147. Overview of Pond B from north embankment, looking southwest.

Appendix C
Photo GPS Locations

Appendix C
Photo GPS Locations

Site: IPL Petersburg Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983 (Consus)
Coordinate Units: Feet

Photo No.	Northing	Easting
1	1,197,154.42	2,907,278.8
2	1,196,695.07	2,907,317.39
3 and 4	1,196,134.84	2,907,311.79
5 and 6	1,195,026.35	2,907,018.68
7 and 8	1,194,822.36	2,906,828.08
9 and 10	1,194,763.86	2,906,650.73
11 and 12	1,194,877.74	2,906,291.01
13 and 14	1,195,026.07	2,906,095.61
15	1,195,237.68	2,905,875.2
16, 17, and 18	1,195,355.39	2,905,725.9
19, 20, 21, and 22	1,195,577.52	2,905,649.51
23	1,195,631.82	2,905,623.38
24	1,195,649.89	2,905,577.95
25	1,195,712.69	2,905,592.19
26 and 27	1,195,732.16	2,905,618.38
28	1,196,012.37	2,905,607.63
29	1,196,126.46	2,905,647.23
30, 31, 32, and 33	1,196,212.28	2,905,658.53
34	1,196,241.26	2,905,534.35
35	1,196,244.33	2,905,639.75
36, 37, 38, and 39	1,196,357.36	2,905,647.78
40	1,196,380.81	2,905,890.91
41 and 42	1,196,418.98	2,906,009.8
43 and 44	1,196,537.13	2,906,343.15
45 and 48	1,197,081.61	2,906,464.67
46	1,197,078.94	2,906,444.59
47	1,197,043.34	2,906,346.15
49 and 50	1,197,196.76	2,907,222.98
51 and 52	1,197,221.64	2,907,164.76
53 and 54	1,197,276.98	2,907,091.7
55	1,197,294.99	2,907,138.27
56 and 57	1,197,278.27	2,906,903.61
58	1,197,225.6	2,906,806.89
59	1,197,199.56	2,906,525.4
60	1,197,160.57	2,906,495.03
61	1,197,131.72	2,906,425.09
62	1,197,102.68	2,906,420.41
63	1,196,819.87	2,905,940.25
64 and 65	1,196,716.99	2,905,774.19
66	1,196,748.21	2,905,768.58
67	1,196,795.01	2,905,772.35
68	1,196,639.38	2,905,656.75
69	1,196,624.14	2,905,593.55
70	1,196,640.09	2,905,631.6

Appendix C
Photo GPS Locations

Site: IPL Petersburg Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983 (Consus)
Coordinate Units: Feet

Photo No.	Northing	Easting
71	1,196,688.03	2,905,540.96
72	1,196,579.98	2,905,679.26
73	1,196,748.59	2,905,568.04
74	1,196,798.03	2,905,623.98
75, 76, 77 and 78	1,196,835.91	2,905,688.5
79	1,196,918.22	2,905,645.74
80	1,197,015.7	2,905,618.9
81	1,197,508.14	2,905,754.05
82	1,197,494.9	2,905,817.95
83	1,197,482.25	2,905,881.09
84	1,197,573.36	2,905,902.08
85	1,197,845.76	2,905,933.87
86	1,198,067.65	2,906,072.53
87	1,198,184.83	2,906,119.58
88	1,198,607.04	2,906,485.21
89	1,198,582.9	2,906,525.44
90	1,198,555.97	2,906,545.58
91 and 92	1,198,520.08	2,906,566.62
93	1,198,494.83	2,906,649.93
94 and 95	1,198,393.77	2,906,831.24
96	1,198,167.83	2,906,815.71
97	1,197,455.33	2,907,103.95
98	1,197,425.67	2,907,059.95
99 and 100	1,198,702.46	2,906,816.83
101	1,198,749.68	2,906,782.23
102	1,198,782.19	2,906,757.72
103	1,198,798.28	2,906,738.63
104	1,198,796.91	2,906,923.12
105 and 106	1,199,156.84	2,907,265.46
107 and 108	1,199,107.69	2,907,296.74
109 and 110	1,199,067.37	2,907,289.6
111 and 112	1,199,105.91	2,907,598.09
113 and 114	1,199,170.09	2,907,596.61
115	1,199,196.27	2,907,908.91
116	1,199,180.32	2,908,093.94
117	1,199,205.05	2,908,278.31
118	1,199,174.9	2,908,265.64
119	1,199,137.99	2,908,262.95
120 and 121	1,199,104.9	2,908,260.69
122	1,199,153.91	2,908,335.46
123 and 124	1,199,077.38	2,908,462.95
125	1,199,060.8	2,908,473.25
126	1,198,870.15	2,908,483.7
127	1,198,767.58	2,908,544.55

Appendix C
Photo GPS Locations

Site: IPL Petersburg Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983 (Consus)
Coordinate Units: Feet

Photo No.	Northing	Easting
128	1,198,799.4	2,908,448.99
129	1,197,620.06	2,907,421.89
130 and 131	1,197,373.73	2,907,283.3
132 and 133	1,197,677.68	2,907,398.72
134	1,198,519.32	2,907,926.13
135	1,198,322.97	2,907,792.93
136 and 137	1,197,594.55	2,907,238.92
138	1,197,571.62	2,907,207.07
139 and 140	1,198,397.48	2,906,859.44
141, 142, and 143	1,198,422.21	2,906,920.48
144	1,198,715.78	2,906,689.38
145	1,198,702.26	2,906,738.73
146	1,198,696.68	2,906,810.89
147 and 148	1,198,338.99	2,906,700.36